

**BUILD UP Skills – United Kingdom –  
Analysis of the national status quo**



**May 2012**

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### **Further information**

More details on BUILD UP Skills can be found at [www.buildupskills.eu](http://www.buildupskills.eu)

More details on the IEE programme can be found at <http://ec.europa.eu/intelligentenergy>

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# Executive Summary

## Overview of research

Build Up Skills UK is an alliance of four Sector Skills Councils (SSCs)<sup>1</sup>: Asset Skills, CITB-ConstructionSkills, Energy & Utility Skills and SummitSkills. Working in collaboration these SSCs are undertaking a programme of research to ensure that employers in the built environment sector in the UK have the skilled workforce (specifically craft and technical 'blue collar'<sup>2</sup> workers) required to meet EU 2020 energy efficiency targets:

- to reduce energy consumption by 20%;
- to reduce greenhouse gas emissions by 20%;
- to meet 20% of energy needs through renewable resources.

The findings from this report will be used to inform the development of a 2020 Skills Roadmap.

## Key findings

### Energy efficiency 2020 targets for the UK

The UK has committed to achieving 15% of its energy from renewable sources in 2020<sup>3</sup>, broken down as follows:

- Approximately 30% of electricity demand, including 2% from small-scale sources;
- 12% of heat demand;
- 10% of transport demand<sup>4</sup>.

In the devolved nations:

- **Wales** aims to double its renewable electricity by 2025, with 4GW from marine energy;
- **Scotland** is working towards renewable sources to generate the equivalent of 100% of Scotland's gross annual electricity consumption by 2020 and for renewable sources to provide the equivalent of 11% of heat demand by 2020<sup>5</sup>;
- **Northern Ireland** has set targets of 40% for renewable electricity and 10% renewable heat by 2020<sup>6</sup>.

<sup>1</sup> Employer-led bodies licensed by the UK Government to raise skills levels across the workforce by researching existing and future skills needs, identifying skills gaps and developing solutions including Apprenticeships, National Vocational Qualifications (NVQs) and National Occupational Standards (NOS)

<sup>2</sup> Typically referring to workers that are based on some form of site and carry out physical or manual work – for example bricklayers, plasterers, roofers etc.

<sup>3</sup> In comparison to 1.3% in 2005 and 2.9% in 2009.

<sup>4</sup> Department of Energy and Climate Change (DECC) (2009), *National Renewable Energy Action Plan*

<sup>5</sup> Data from the Scottish Government

<sup>6</sup> DECC (2011), *UK Renewable Energy Roadmap*

### Expected contribution of the built environment sector

In the UK the built environment sector has significant influence over CO<sup>2</sup> emissions, at almost 47% of the total. Currently manufacturing accounts for the largest amount of emissions within the construction process.

The UK's 1.8 million non-domestic buildings account for a third of CO<sup>2</sup> emissions in the building sector. Three-quarters of these buildings were built before 1985 and therefore pre-date building regulations. Typically larger in roof and floor space, they offer substantial potential for on-site renewables.

### Energy consumption and energy efficiency in the UK

In 2010, total overall primary energy consumption in the UK in primary energy terms (fuels obtained directly from natural sources) was 218.5 million tonnes of oil equivalent<sup>7</sup>.

There are almost 27 million domestic dwellings in the UK<sup>8</sup>. It is clear that more efficient heating and lighting systems in domestic homes have contributed to energy savings since 1970 but although energy use per household has fallen by 16% since then, the rise in actual number of households means that *overall* energy use has increased by 17%<sup>9</sup>.

### Renewable energy sources

In 2011, renewables accounted for almost 7% of the UK's electricity supply. Power generated on wind farms has increased by nearly 500%, meaning that onshore wind can provide sufficient electricity for around 1.7 million homes<sup>10</sup>. Furthermore there has been an increase of nearly 10% in the UK's Combined Heat and Power (CHP) capacity during the period 2008 to 2010<sup>11</sup>; generation of low carbon electricity rose from 23% to 28.5% in 2011; and at the end of April 2012, 314,043 PV installations were in place in the UK, with a capacity in kW of 1,072,529<sup>12</sup>.

### Workforce in the built environment sector

Data in the table below from August 2011<sup>13</sup> present a summary of estimated blue collar/craft workers in the UK built environment sector:

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<sup>7</sup> DECC Statistics

<sup>8</sup> Innovation and Growth Team (IGT) (2010), *Low Carbon Construction – final report*

<sup>9</sup> DECC (2011), *Housing Energy Fact File*

<sup>10</sup> DECC (2011), *Housing Energy Fact File*

<sup>11</sup> DECC Energy Statistics

<sup>12</sup> DECC Energy Statistics

<sup>13</sup> Office for National Statistics



**Table 1: Estimated blue collar/craft workers in the UK built environment sector (August 2011)**

Occupation	Number of employees
Electricians and electrical fitters	277,000
Bricklayers and masons	12,000
Roofers, roof tilers and slaters	43,000
Plumbers and heating and ventilation engineers	190,000
Carpenters and joiners	217,000
Glaziers, window fabricators and fitters	45,000
Plasterers	58,000
Floorers and wall tilers	41,000
Painters and decorators	118,000
Scaffolders, staggers and riggers	31,000
Construction operatives	85,000
Steel erectors	12,000
Construction and building trades not elsewhere classified (nec)	226,000
<b>TOTAL</b>	<b>1,355,000</b>

Estimated numbers in the blue collar workforce requiring training to meet the 2020 energy efficiency targets

Table 2 below presents a summary of the *estimated* numbers in the workforce, by occupation, likely to require some form of up-skilling in order to help meet the energy efficiency targets. These figures are based on the scoring technique used within this research, to estimate current skill and knowledge capability of the existing workforce<sup>14</sup>.

**Table 2: Estimated numbers in the blue collar workforce requiring training to help meet 2020 energy efficiency targets**

Occupation	Average score for new technology skills and knowledge	2020 Deficit	2012 Workforce	Estimate of training requirement 2012-2020
Construction and building trades nec	5.6	-2.9	227356	66000
Glaziers, window fabricators and fitters	5.7	-2.8	45270	12700
Plumbers; heating and ventilation engineers	5.8	-2.7	191140	52000
Construction operatives	5.8	-2.7	85510	23000
Roofers, roof tilers and slaters	6.5	-2.0	48258	10000
Bricklayers and masons	6.9	-1.6	12072	2000
Electricians and electrical fitters	7.1	-1.4	278662	39000
Carpenters and joiners	7.2	-1.3	218302	28000
Floorers and wall tilers	7.3	-1.2	41246	5000
Plasterers	7.4	-1.1	58348	6500
Painters and decorators	7.9	-0.6	118708	7200
Scaffolders, staggers and riggers	8.2	-0.3	31186	1000
Steel erectors	8.4	-0.1	12072	120

<sup>14</sup> Specific skills and knowledge were mapped to blue collar occupations and span a range of required techniques – for example installation of solar thermal - in order to arrive at an average skills/knowledge score<sup>14</sup> specifically for 2020. The difference between current scores and an estimated “optimum skill/knowledge score” of 8.5 represents what we might term the “2020 skills/knowledge deficit” for each occupational group. These data provide a high-level estimate of probable numbers requiring training to meet 2020 targets. However it should be noted that there is no accurate knowledge base in relation to the length of time the deficit in each occupational group would take to remedy for each operative - given changes in training courses, qualifications and provider capacity.

The estimated numbers likely to require training through to 2020 therefore account for just under a fifth of the current workforce.

### Skills and knowledge needs

Priority needs for skills and knowledge for the blue collar workforce span the following:

- Understanding of the principles of heat loss;
- Understanding air quality, air tightness and ventilation requirements of buildings;
- Knowledge of the range of energy efficiency measures, and their suitability for different building fabrics and ages, including pre-1919 and hard to treat buildings;
- The so-called 'hierarchy' of energy efficiency measures, i.e. the sequence in which issues in buildings must be addressed to ensure maximum energy efficiency;
- Awareness of energy consumption;
- The 2020 energy efficiency targets and what they mean for the industry;
- Legislation relating to energy efficiency (as it continues to emerge) and what this means for the built environment sector;
- Quality assurance specifically in relation to energy efficiency;
- Installation of ground and air source heat pumps;
- Installation of solar thermal and solar photovoltaic (PV)
- Installation of energy recovery/efficient cooling/shallow geothermal systems;
- Installation of biomass, combined heat and power and wind turbines.

### Qualification needs

The general consensus among respondents to this research is that existing qualifications can - for the most part - be refined and expanded without the need to create a large suite of completely new qualifications. However there is a need for more qualifications at Level 3, as Levels 1 and 2 are not always deemed to be suitable for the workforce (from the perspective of employers).

Existing vocational education and training (VET) provision has been mapped against the high priority skills and knowledge needs required to achieve the 2020 energy targets. Findings suggest that solar PV and solar thermal are relatively well catered for, but that there is limited provision in relation to other high priority needs.

Primary research for this project indicates that at least 700 new trainers will be needed to deliver Green Deal<sup>15</sup> provision alone – should there be sufficient consumer demand for the scheme. Over half of the employers interviewed for this research consider there is a need, to some extent, to recruit more specialist trainers, and for closer links between industry and providers to ensure courses remain up-to-date with emerging technologies.

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<sup>15</sup> The UK Government's planned mechanism for improving the energy efficiency of households and non-domestic properties in Great Britain which will be available from Autumn 2012

## Conclusions

This research indicates that there are a number of skills and knowledge gaps (see Chapter 7) likely to impede the UK's capacity to meet the 2020 energy efficiency targets. Furthermore the supply of training provision is severely limited in relation to emerging technologies. There are only pockets of specialist courses, and low levels of demand from employers are preventing more widespread development of training.

It is likely that progress towards the EU 2020 energy targets could move forward at different paces within the different UK nations. Governments in each of the four nations have varied responsibilities and strategies/policy stances relating to education, training and skills, funding, and the energy efficiency agenda as a whole.

Potential barriers obstructing the achievement of the 2020 energy efficiency targets include - restricted funding for training; low levels of industry and consumer awareness/understanding of the energy efficiency agenda (contributing to limited demand for training among employers); and fragmented policy at strategic levels, resulting in a lack of confidence as to the UK Government's stance on the 'green' agenda.

## Recommendations<sup>16</sup>

1. Governments in all UK nations should develop or update coherent green skills and jobs strategies addressing research that points to the numbers of workers that require training, likely means to bring about investment into training, priority skills and knowledge gaps that need to be filled, and how this will be addressed.
2. Government policies for the energy efficiency agenda in all UK nations must be maintained over a significant amount of time to give industry reassurance of a commitment to drive this forward. This should include consideration of providing employers and consumers with funding for training and/or incentives to adopt energy efficiency measures.
3. Governments in all nations (particularly Northern Ireland where regulations have not been updated since 2000) should consider revisions to the building regulations that could act as a strong catalyst for change<sup>17</sup> - notably energy efficiency requirements for non-domestic buildings which account for a substantial amount of current emissions, and regulation of embodied carbon.
4. There is clearly a need for Build Up Skills UK to broaden the scope of the 2020 Skills Roadmap. The professional workforce as well as energy assessors and advisors need up-skilling and training to support achievement of the targets – the blue collar

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<sup>16</sup> Recommendations are outlined in more detail in Chapter 9

<sup>17</sup> A consultation in relation to the revision of UK Building Regulations consultation exercise closed in April 2012<sup>17</sup>, and the outcome is currently awaited. It will be vital that the UK Government not only pays close attention to industry responses to the consultation, but responds quickly to embed required changes

workforce should not be considered in isolation.

- 5.** There is a need to raise consumer awareness of the energy efficiency agenda to stimulate demand<sup>18</sup> which in turn will prompt a need for the workforce to up-skill in order to meet this demand. This would act as a catalyst for the development of relevant training provision. Sector Skills Councils need to take a leading role in raising awareness of the energy efficiency agenda, the targets and what this can mean for businesses within the built environment sector.
- 6.** Gaps in energy consumption and efficiency data should be addressed so that responsible authorities can monitor progress against targets more effectively.
- 7.** To stimulate demand for the scheme, Green Deal providers should work closely with Local Authorities, Housing Associations and social landlords (that between them own a large proportion of domestic housing stock).
- 8.** Promotion of Apprenticeships and training in the sector should include a focus on the impact that the low carbon, energy efficiency or so-called 'green' agenda is beginning to have on existing job roles.
- 9.** Training provision needs to be offered in a more flexible manner that will better suit the needs of industry<sup>19</sup>. A transitional training model with a 'menu' of skills plus options for 'bolt-on' units and modules is most likely to help the workforce up-skill quickly, easily, and in a cost effective manner.
- 10.** More 'train the trainer' provision is necessary to up-skill the number of new trainers required for the sector, as well as Continuing Professional Development (CPD) so that tutors remain up-to-date with industry demands in relation to energy efficiency.
- 11.** The sustainability/energy efficiency agenda should be part of the school curriculum<sup>20</sup>, with general awareness embedded in other sector qualifications, as every occupation is likely to contain an element of sustainability and energy efficiency awareness.
- 12.** Employers and SMEs in particular should take some responsibility for seeking information about the energy efficiency agenda – in particular relevant legislation and policy, and how this should be interpreted. Employers should also seek closer relationships with energy suppliers to ascertain which types of energy efficiency systems will be marketed to consumers – dictating types of training and qualifications required among the workforce.

<sup>18</sup> It should be noted that the Scottish Government has committed to a marketing campaign to raise awareness about energy efficiency

<sup>19</sup> In Scotland Flexible Training is already seeking to address this

<sup>20</sup> It should be noted that in Scotland sustainability is part of its Curriculum for Excellence and 98% of all Scottish Schools (100% of secondary) have signed up to the Scottish Eco-Schools Programme

## Chapter 1: Introduction

Build Up Skills UK is an alliance of four Sector Skills Councils (SSCs)<sup>21</sup>: Asset Skills, CITB-ConstructionSkills, Energy & Utility Skills and SummitSkills. Working in collaboration these SSCs are undertaking a programme of research to ensure that employers in the construction, built environment and renewable energy sectors in the UK have the skilled workforce (specifically craft and technical 'blue collar'<sup>22</sup> workers) required to meet EU 2020 targets:

- to reduce energy consumption by 20%;
- to reduce greenhouse gas emissions by 20%;
- to meet 20% of energy needs through renewable resources.

### Definitions

In the UK the "building sector" is most commonly referred to as the "built environment sector". This term includes the design and construction of buildings - domestic, commercial and industrial, as well as the installation and maintenance of building systems, and the design, installation and maintenance of energy saving and sustainable systems and equipment.

In this report, therefore, references to the "built environment sector" as well as the "building sector" encompass all of the above segments.

The scope of this report spans all four UK nations (England, Northern Ireland, Scotland and Wales). However it should be noted that since 1998, some areas of the Westminster-based central government of Great Britain and Northern Ireland have been devolved to the Scottish Government, Welsh Government and Northern Ireland Executive. In this report therefore, references to the 'UK Government' will relate to central Government in Westminster.

In June 2011 the alliance of SSCs that form Build Up Skills UK submitted a proposal to draw down funding from the Intelligent Energy Europe programme<sup>23</sup>. Following the acceptance of this proposal, a programme of research began in November 2011 and is due to conclude in May 2013.

This programme has support from all Governments in the UK and meets the priorities of individual departments in Westminster including the Departments of: Energy and Climate

<sup>21</sup> Employer-led bodies licensed by the UK Government to raise skills levels across the workforce by researching existing and future skills needs, identifying skills gaps and developing solutions including Apprenticeships, National Vocational Qualifications (NVQs) and National Occupational Standards (NOS)

<sup>22</sup> Typically referring to workers that are based on some form of site and carry out physical or manual work – for example bricklayers, plasterers, roofers etc.

<sup>23</sup> <http://ec.europa.eu/energy/intelligent/>

Change (DECC), Business Innovation and Skills (BIS), and Environment Food and Rural Affairs (DEFRA).

The research programme will be delivered through a series of work packages as outlined below:

#### Work packages 1 and 2

This deals with the management of the programme and is led by a Steering Committee spanning UK-wide stakeholders to drive and direct the work, as well as oversee finances, communications and risk assessment. Work package 2 also convenes a core National Platform<sup>24</sup> of 50 expert stakeholders who, it is intended, will contribute to all aspects of research, development and endorsement of the analysis of the National Status Quo and 2020 Skills Roadmap. A wider platform will provide secondary consultation and validation, and has unlimited membership.

#### Work package 3

This focuses on the analysis of the National Status Quo, a comprehensive review of existing skills, training and qualification provision and anticipated skills needs. The final report from this phase will feed into the development of a 2020 Skills Roadmap.

#### Work package 4

Using the research findings from the analysis of the Status Quo, a comprehensive 2020 Skills Roadmap will be developed.

#### Work package 5

Dual objectives for this phase are to secure endorsement from employers and stakeholders of the analysis of the Status Quo and the 2020 Skills Roadmap.

Work packages 6 and 7 will detail the EU Exchange activities and evaluation of the project.

Pye Tait Consulting<sup>25</sup>, a research organisation specialising in education and skills, was commissioned to undertake work package 2 – the analysis of the National Status Quo. This report presents the findings and conclusions from this phase of the research programme.

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<sup>24</sup> More information about joining the Platform can be found at [www.buildupskillsuk.org](http://www.buildupskillsuk.org)

<sup>25</sup> [www.pyetait.com](http://www.pyetait.com)

## Chapter 2: Objectives and methodology

### 2.1 PURPOSE OF THE REPORT

This report presents an analysis of the National Status Quo in the UK blue collar built environment workforce: a comprehensive review of existing skills, training and qualification provision and anticipated skills needs.

### 2.2 RESEARCH OBJECTIVES

The research consisted of two core strands:

#### 1. Skills Analysis:

A review and analysis of the national continuing education system within the built environment sector, national policy and strategies relating to green skills and jobs and quantified research into the current workforce in the sector.

#### 2. Sector Analysis:

An analysis of the built environment sector in the UK, including the building stock, energy efficiency, renewable contribution and national policies and strategies relating to the built environment sector.

The objectives are to:

- Present the characteristics of the built environment sector in the UK, including national policies and strategies to contribute to the EU 2020 energy targets; and statistics and data relating to historic, current and anticipated characteristics of the building and energy sectors and workforce;
- Establish the current pattern and extent of supply of vocational and educational training (VET), particularly in relation to energy efficiency and renewables;
- Determine the current status quo in relation to skills, training and qualifications relating to energy efficiency of the UK blue collar workforce in the built environment;
- Explore the extent of alignment of current skills demand versus current VET supply, including identification of skills gaps, qualifications needs and barriers to the demand/supply of training;
- Develop a definition of the energy savings and renewable energy contributions to the built environment sector;
- Analyse all evidence gathered to explore the various drivers, implications and necessary responses to change across the built environment between 2012 and 2020

to provide a starting point for the 2020 Skills Roadmap;

- Identify a prioritised list of capacity issues that will impact on the ability of the built environment sector to contribute towards the 2020 targets.

## 2.3 SCOPE OF THE RESEARCH

The core initiative of Build Up Skills focuses on a specific target group: on-site workers, craftsmen and installers of the building sector. Whilst the European Commission recognise the strategic importance of other occupations such as energy assessors and advisors, and professional/managerial roles such as architects, these roles have been deemed to be out of scope for this current study because the European Commission considers there is an urgent need for qualified workers at an operational level who have the capability to handle the entire range of issues surrounding the installation and maintenance of energy efficiency and renewable energy systems in buildings of all types and ages.

## 2.4 RESEARCH METHOD

We collected and analysed relevant data using a mix of quantitative and qualitative methodologies, in order to ensure robust and detailed information. In summary, the approach consisted of:

- Desk research (on-going throughout the project) into the characteristics of the built environment sector, national policies and strategies, skills needs and gaps, building and energy sector statistics, existing training provision and gaps, and barriers in relation to meeting the EU 2020 targets;
- In-depth telephone interviews with 44 industry stakeholders<sup>26</sup>;
- Focus groups with industry stakeholders, employers and training providers, held in England, Northern Ireland, Scotland and Wales;
- A stratified random survey of 355 employers and training providers;
- Comprehensive mapping of accredited and non-accredited Vocational Education and Training (VET) provision currently available in the UK relating to energy efficiency for the blue collar built environment workforce.

In addition researchers Pye Tait Consulting gave a presentation to introduce the research and seek engagement and input from expert sector stakeholders, at a consultation event<sup>27</sup> held by Build Up Skills UK.

All research data have been analysed in detail to inform this final report.

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<sup>26</sup> Contact details supplied from Build Up Skills UK – the population consisted of the core and wider platform target and current membership

<sup>27</sup> 6 March 2012, London



### Stakeholders interviewed for the research

Expert stakeholders<sup>28</sup> have contributed to the research from the organisations outlined in the box below:

### Expert stakeholders interviewed for this research<sup>29</sup>

<p>Awarding Body for the Built Environment British Gas Cardiff University Carter Synergy Centre for Regeneration Excellence Wales (CREW) Changeworks Scotland Cogent Community Housing Cymru Electrical Contractors' Association Energy Institute EoN Federation of Master Builders John Dunn Group Leeds College of Building National Energy Action National Energy Action Northern Ireland National Energy Foundation National Energy Services</p>	<p>National Housing Federation PD Partnership Regeneration Skills Collective Scotland's Colleges Energy Skills Partnership Scottish and Southern Energy Scottish Federation of Housing Associations Scottish Funding Council Scottish Government (Low Carbon Economy Unit; Energy Directorate) Senta Skills Development Scotland Welsh Construction Federation Alliance Welsh Government Welsh School of Architecture Unite (<i>Trade Union</i>)</p> <p><i>In addition a number of independent consultants specialising in energy efficiency were interviewed</i></p>
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Employers interviewed for this research spanned all UK nations, with a sample frame drawn from Standard Industrial Classification (SIC) codes relevant to the blue collar built environment workforce, as agreed in conjunction with Build Up Skills UK<sup>30</sup>.

The following figures illustrate the spread of employer respondents to the survey by region/nation; SIC code; organisation activities and organisation size. Views were acquired from all sizes of company including individuals working on their own account. Around a fifth of respondents are sole traders (Figure 5).

It should be noted that the sample frame largely reflects the distribution of built environment enterprises across the UK<sup>31</sup> however within Northern Ireland a higher proportion of employers (compared with other nations) declined to participate in the research.

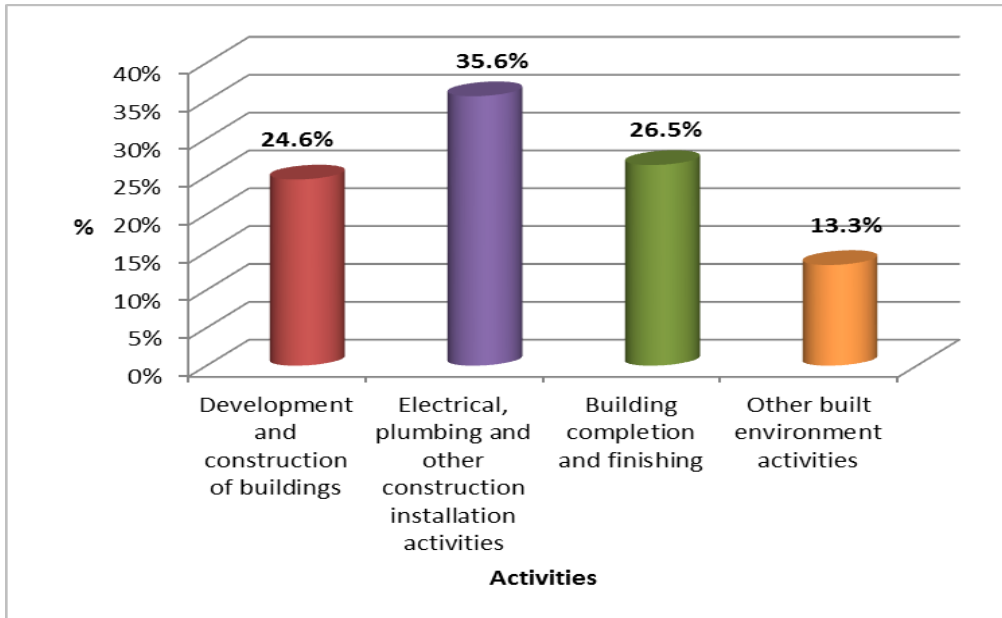
<sup>28</sup> A number of organisations contributed multiple responses – for example from different departments

<sup>29</sup> Cogent and Senta are the Sector Skills Councils for science-based industries and science, engineering and manufacturing technologies respectively

<sup>30</sup> Further detail is provided in Section 11.3

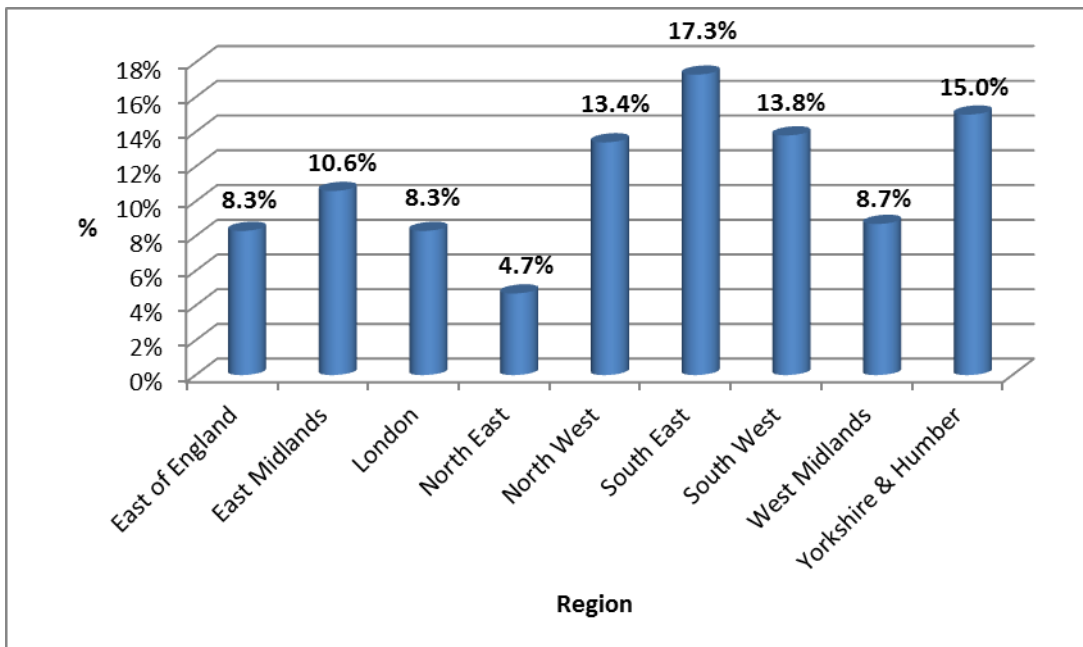
<sup>31</sup> Data from the Office for National Statistics shows the distribution as: England – 85%; Wales – 4%; Scotland – 7% and Northern Ireland – 4%

**Figure 1: Employers interviewed for this research by SIC code (clustered<sup>32</sup>)**



Base 314

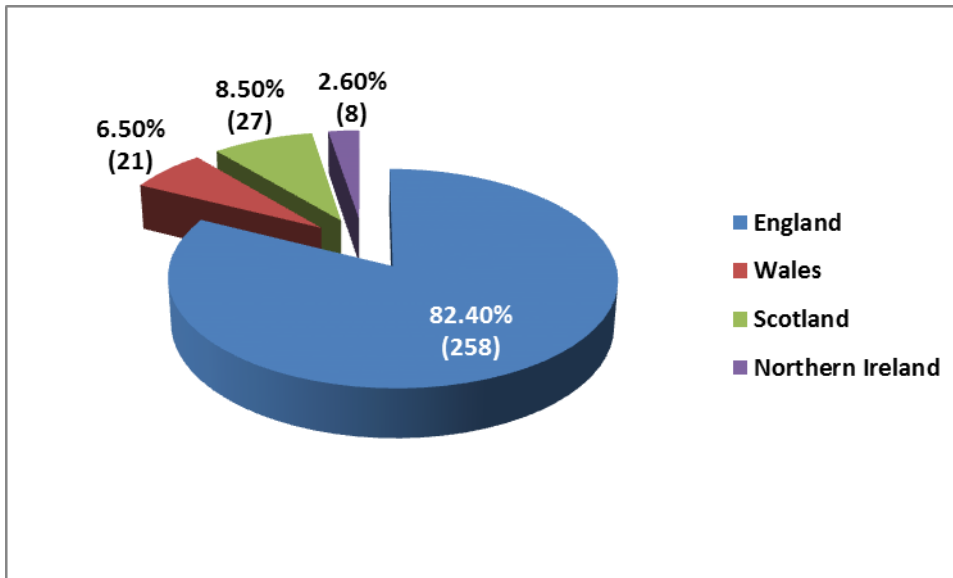
**Figure 2: Employers interviewed for this research by region (England)**



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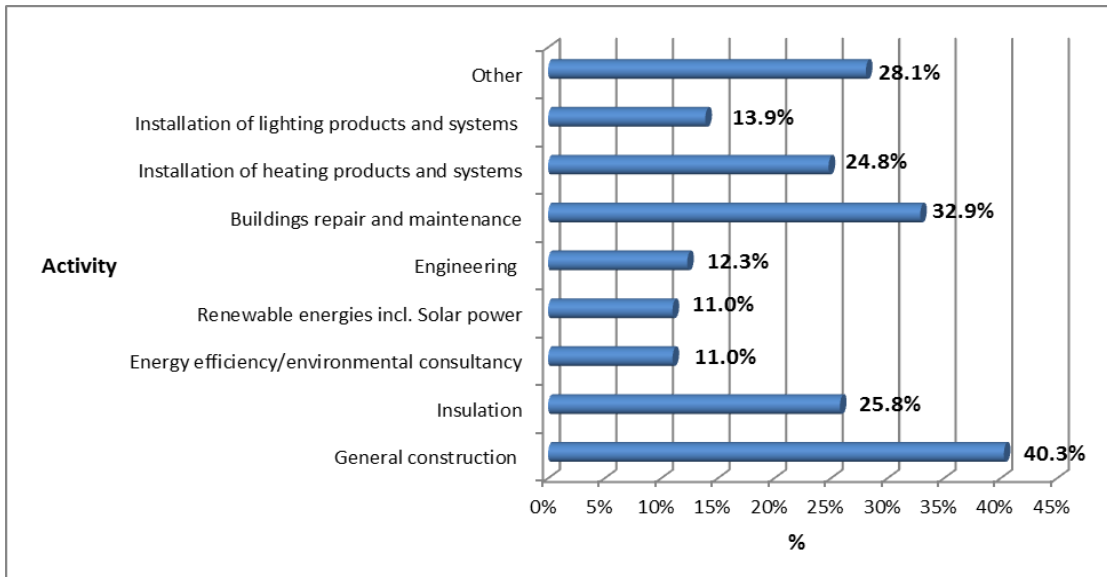
<sup>32</sup> For further detail please see Section 11.2

**Figure 3: Employers interviewed for this research by UK nation**



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**Figure 4: Employers interviewed for this research by organisational activity**

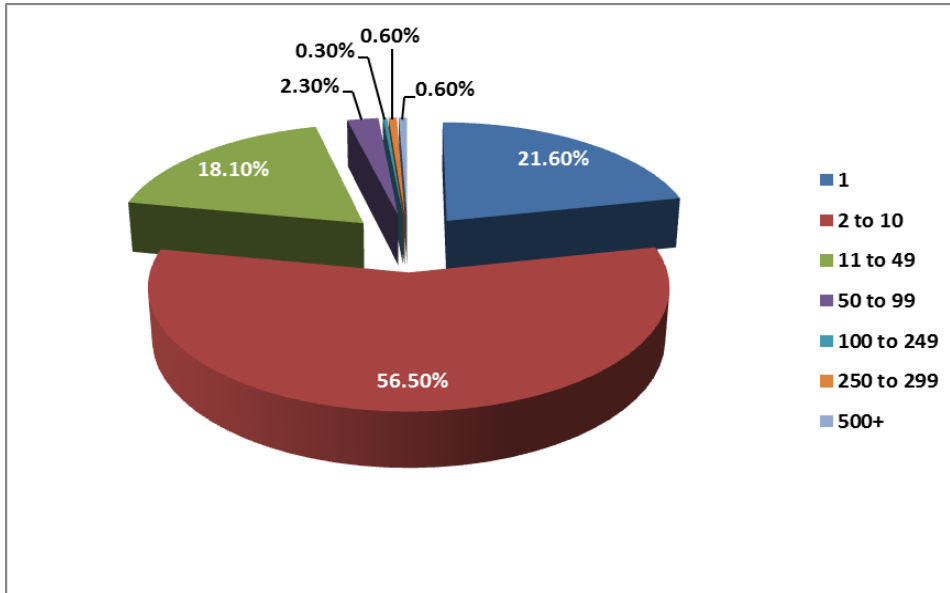


Base 314 (N.B. some respondents selected multiple activities)

Other occupations (in relation to Figure 4) included:

- Asbestos removal
- Carpentry/joiners
- Drainage
- General electrical installations
- Glazing
- Natural stoneworkers
- Paving
- Plastering
- Plumbers
- Property management
- Restoration of old buildings
- Roofing and cladding
- Shop fitting
- Tiling

**Figure 5: Employers interviewed for this research by organisation size**



Base 314

## Chapter 3: Characterisation of the building sector

### 3.1 HISTORICAL CONTEXT

The UK built environment sector is one of the most significant industries in the developed world. In the UK it has an annual turnover of more than £100 billion (€130 billion) and accounts for almost 10% of the country's gross domestic product (GDP)<sup>33</sup>. Around two million people are employed in the built environment sector, which is five times the size of the aerospace industry and more than three times larger than the automotive industry<sup>34</sup>.

From the late 1800s when concrete began to play an increasingly important role in construction, and other manufactured products were introduced, innovation has continued in this area, literally supporting the building market as it expanded. The industry has enjoyed similar periods of rapid development, but even before the First World War, has been particularly vulnerable to the challenges brought about by economic downturn<sup>35</sup>. In the recession of the 1990s the sector was one of the first to be hit, and the effect of the recent credit crunch was dramatic: in 2011 output in the industry fell at a faster rate than total GDP<sup>36</sup> and the proportion of the UK's economy represented by construction (shown as a percentage of GDP) was the lowest in 55 years<sup>37</sup>.

Whilst the industry has always mirrored the economic environment - booming in periods of high and sustained growth and slumping in times of recession - the UK built environment sector has also maintained its reputation of being at the very forefront in terms of design, construction techniques and technological refinement.

Like many other European building sectors, the UK building stock contains a large proportion of high quality heritage buildings dating in some cases from the Middle Ages but with large numbers of Elizabethan, Georgian, Victorian and Edwardian structures. In certain areas of the UK, particularly in Wales and Scotland, but also in key historical cities such as York, Chester, Lincoln, and parts of London, the proportion of pre-1919 buildings can be between 30% and 50%. This places a high premium on "heritage skills" in the sector. These have been a particular target for enhanced training and vocational education for many years but have recently come into even greater prominence with the need to improve such buildings to meet the latest energy efficiency targets.

In historical terms the workforce has most commonly been recruited within the British Isles and the UK has relied to a large extent upon the Apprenticeship system to train its craftspeople. This system is time proven at creating highly skilled and experienced operatives.

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<sup>33</sup> Strategic Forum for Construction Targets 2012

<sup>34</sup> Strategic Forum for Construction Targets 2012

<sup>35</sup> CAGE (2010), *Labour Markets in the Interwar Period and Economic Recovery in the UK and the USA*

<sup>36</sup> Commons Library Standard note (6 March 2012) SN/EP/1432

<sup>37</sup> <http://www.guardian.co.uk/business/2011/dec/28/construction-industry-long-winter>

Today the Apprenticeship system works alongside the more commonly understood systems of college-based Vocational Education and Training (VET) approaches to educate and train the modern built environment workforce.

### 3.2 THE BUILDING SECTOR'S CONTRIBUTION TO THE UK'S ECONOMY

For many years the building sector<sup>38</sup> has made a valuable contribution to UK GDP – for example, around 8.5% in 2008, representing £124 billion (€8 billion) - a figure that increases to approximately 10% when the entire value chain is taken into account<sup>39</sup>. In 2010 the construction sector accounted for 7% of national Gross Value Added (GVA) – around £90.7 billion<sup>40</sup>.

In indirect terms, the sector's reliance on an extended and varied supply chain drives growth throughout the UK economy. The sector is largely supported by small and medium sized businesses with the vast majority of companies (around 95%<sup>41</sup>) employing fewer than 50 people. Figures published by L.E.K. Consulting suggest that every £1 spent on construction output generates a GDP increase, or further economic activity worth £2.84<sup>42</sup>, and additionally, the Treasury receives economic value through tax income and benefit savings. Furthermore much of the sector's supply chain activity is UK-based, making it an important driver of growth for other sectors, without which there would be a loss of domestic production, capacity and skills. Construction is also a lucrative export activity, as UK workers go abroad to work on environmental, transport and building projects<sup>43</sup>.

Quite apart from its national importance the built environment sector also has a vital part to play in the economy of the regions and nations of the UK.

### 3.3 THE VALUE CHAIN

Key stakeholders in the UK built environment sector include policy-makers, local authorities, research institutions, universities, developers, designers, constructors, and manufacturers and others and as discussed above, can exert a great deal of influence over building activity. However, stakeholders such as developers, designers, constructors, and manufacturers also feature in the commercial process, as can be seen in Figure 6<sup>44</sup>:

<sup>38</sup> Standard Industrial Classification of Economic Activities (SIC) code 45, excluding construction products and professional services.

<sup>39</sup> UK Contractors Group (2009), *Construction in the UK Economy*

<sup>40</sup> House of Commons Construction Industry Policy Note March 2012

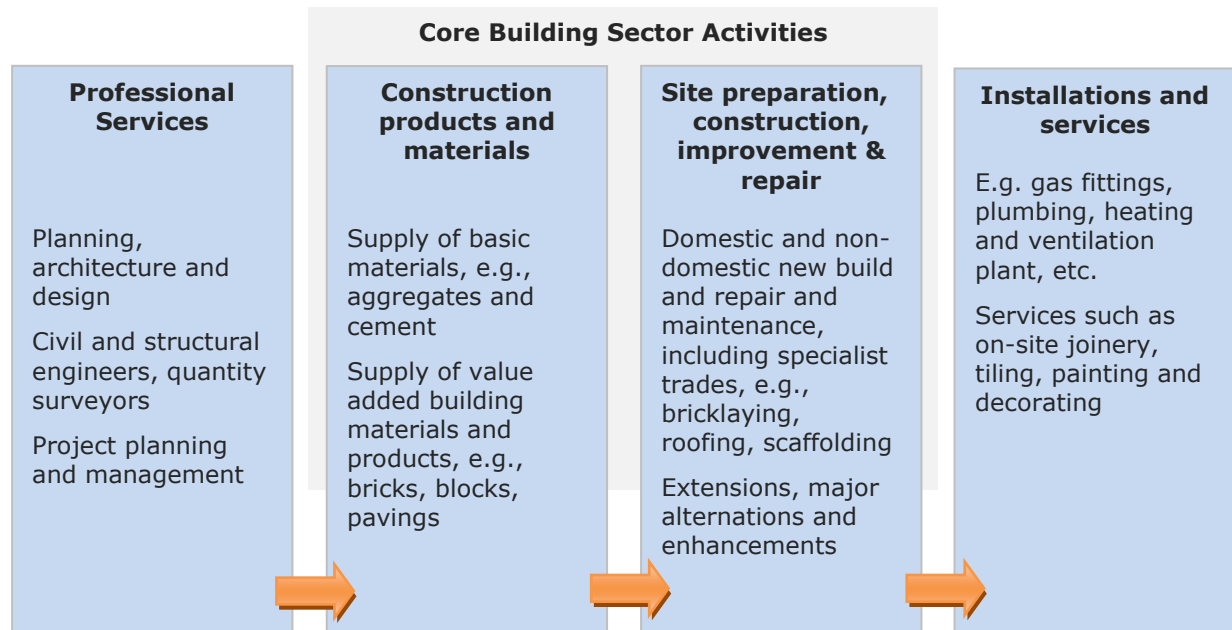
<sup>41</sup> <http://www.fmb.org.uk/news/campaigns/participation-pack/>

<sup>42</sup> UK Contractors Group (2009), *Construction in the UK Economy* – the increase is due to indirect impact of investment in the supply chain and induced impact through employment/income in construction and other sectors leading to an increase in spending and demand/output in the wider economy

<sup>43</sup> <http://www.bis.gov.uk/policies/business-sectors/construction>

<sup>44</sup> UK Contractors Group (2009), *Construction in the UK Economy*

**Figure 6: The construction industry value chain – consisting of c.300,000 organisations with over 3 million employees**



At its core, the supply chain depicted in Figure 6 is concerned with the coordination of material, finances and information with and between collaborating organisations<sup>45</sup>. Each interaction in the process provides business activity (profit, turnover, etc.) – hence the more illustrative description, ‘value chain’. Specialists agree that the rewards for such effective communication include effective cost and margin management, improved value for the client, greater confidence in longer-term planning and increased opportunities to manage waste from each stage of the process<sup>46</sup>.

### 3.4 MAIN FACTORS OF CHANGE AFFECTING THE SECTOR

As with many other UK sectors and in parallel with the built environment sectors in other European nations, the built environment industry is attempting to meet and adjust to a number of different change factors at the same time. These include: economic impacts, the move towards energy conservation and sustainable buildings, constraints on natural resources, an ageing building stock, changes in national demographics as they affect the workforce, and much else.

In recent years the focus on energy and sustainability has created a very different set of priorities alongside new technical and training requirements. In the wider sense the built environment sector is directly and indirectly responsible for around 90% of all surface mineral

<sup>45</sup> Business Technology Forum (2010), *Supply chain management for the construction industry*

<sup>46</sup> Constructing Excellence (2004), *Supply chain management*

extraction, 25% of waste sent to landfill, and about half the total UK emissions of carbon dioxide<sup>47</sup>. The UK built environment sector is one of the most highly regulated of all economic sectors, a trend that has accelerated since the 1980s when the EU planned a programme of rigorous environmental management legislation, pre-empted by the Confederation of British Industry's voluntary code (now the international standard ISO 14001<sup>48</sup>). The built environment sector also launched BREEAM, an environmental assessment method and rating system for buildings, in 1990. Since then more than a million buildings have registered for assessment, and 200,000 buildings have been certified with BREEAM assessment ratings<sup>49</sup>.

Recent research undertaken by the Renewable Energy Association (REA)<sup>50</sup> suggests that the renewables sector offers significant potential for growth, with turnover expected to reach £24 billion (c. €28 billion) by 2020. REA estimates that over 400,000 jobs are needed to meet the EU target of 15% of energy from renewable sources in 2020 (which would be an increase of nearly four-fold from current figures). Turnover associated with this rate of growth would be in the region of £50bn (€53 billion). This is further confirmed by stakeholders in regions such as Wales, where industry stakeholders have predicted a significant rise in demand for external solid wall insulation over the next ten years.

Other drivers of change include:

- Rising fuel and energy prices<sup>51</sup>;
- Constraints on existing natural resources;
- Funding constraints following the impact of the recession (limited lending from UK banks and therefore reductions in house purchases with a knock on effect for house builders);
- Growth of process and product innovation (although can be impeded by limited funding for research and development);
- An expectation among employers and stakeholders that bureaucracy and 'red tape' will increase;
- Lower numbers of apprentices expected to enter the built environment sector over the next 10-15 years (some stakeholders consider there can be a negative image attached to the sector which acts as a barrier);
- Revisions of the UK building regulations, which will take the energy efficiency agenda into account;
- Increased global and national competition;
- Increasing policy and legislation around the energy efficiency agenda (for example in the past two months the Department of Energy and Climate Change has published the

<sup>47</sup> <http://www.sustainableconstruction.co.uk/history.htm>

<sup>48</sup> <http://www.sustainableconstruction.co.uk/history.htm>

<sup>49</sup> <http://www.breeam.org/page.jsp?id=66>

<sup>50</sup> Renewable Energy Association (2012), *Renewable Energy: Made in Britain*

<sup>51</sup> The cost of an average energy bill has risen significantly: from £605 in 2004 to £1,060 in 2010 – IPPR (2012), *The True Cost of Energy*



- UK Bioenergy Strategy and a new Strategic Framework for Low Carbon Heat);
- UK Government commitment to the reduction of fuel poverty;
- Launch of the UK Green Investment Bank from April 2012.

### 3.5 MARKET TRENDS AND FORECASTS

#### Vulnerability

Despite a recent increase in business confidence levels<sup>52</sup>, construction output is expected to fall by at least 5% in 2012<sup>53</sup>, which means that the surplus capacity in the industry will ensure that prices remain static. In the meantime, materials costs are rising (for example, copper and steel<sup>54</sup>) and building companies will have little choice but to respond by further reducing numbers of directly employed staff<sup>55</sup>. This trend has been severe and it is thought that the number of people employed in the industry in 2014 will be more than 250,000 *below* its 2007 record<sup>56</sup>.

A large proportion of the UK construction workforce is made up of lower skilled trade and operative workers (63% in 2009), the category which is 'hit hardest by recession'<sup>57</sup>. This is likely to have a greater effect in the devolved nations, where there are higher proportions of lower skilled workers – in Northern Ireland, for example, three-quarters of construction workers are classed as low-skilled<sup>58</sup>. Employers will also face regulatory challenge; from November 2012 all holiday pay will be subject to National Insurance contributions, as the UK Government withdraws the concession for holiday pay schemes that has operated since the 1960s<sup>59</sup>.

#### Strengths

There may be the opportunity for specialist infrastructure contractors to prosper in 2012 – for example, the Scottish Government has committed to the capital investment needed for the highly significant Forth Replacement crossing; and longer-term, it may invest in high-speed rail links. Scotland is also progressing the move to Tax Incremental Financing, which enables local authorities to fund infrastructure projects by borrowing against future business rates<sup>60</sup>.

<sup>52</sup> Markit/CIPS UK Construction PMI (March 2012) Press release

<sup>53</sup> <http://www.europeanbusinessreview.com/?p=3595>

<sup>54</sup> <http://www.europeanbusinessreview.com/?p=3595>

<sup>55</sup> The construction index.co.uk (2010), *Regional construction forecast data: the big picture*

<sup>56</sup> Construction Skills Network (2005), *Blueprint for UK Construction Skills, 2012-2016*

<sup>57</sup> As reported in the Financial Times: *Low-skilled workers hit hardest by recession*, 20 July, 2011

<sup>58</sup> UK Contractors Group (2009), *Construction in the UK Economy*

<sup>59</sup> The construction industry operated a stamp scheme, which meant employees' holiday pay was guaranteed even if they moved from one employer to another. No national insurance contribution was accounted for in holiday pay. In October 2012 this concession will be withdrawn

<sup>60</sup> <http://www.scotland.gov.uk/Topics/Government/Finance/18232/TIF>

## Forecast

February 2012 data showed a sequence of 14 months of growth in UK construction sector output, which was accompanied by improved confidence<sup>61</sup>. However, forecasts suggest that new construction output will fall by at least 5% over the year as economic activity in the UK and the rest of Europe declines<sup>62</sup>. Regional variance is predicted in Wales and Scotland where public housing expenditure programmes such as the National Housing Quality Standard<sup>63</sup> will engender repair and maintenance work not anticipated in English regions. As a result, the annual average growth rate for housing repair and maintenance in Wales is forecast to be 3.8% between 2010 and 2014, and 3.2% in Scotland, significantly higher than the 0.4% predicted for the UK as a whole<sup>64</sup>.

In 2012, the building sector will face significant challenges, including the following issues:

- Uncertain property values;
- Restricted access to consumer and investor credit;
- Increasing unemployment figures;
- Further public spending cuts (forecast €9 billion over four years following €9 billion over the previous two years<sup>65</sup>).

### 3.6 MIGRANT WORKERS AND THE INFORMAL ECONOMY

The “informal economy” operating within the built environment sector – in particular its size, fluctuation and impact on employment – is often divisive and controversial. A significant proportion of construction employees (>60%) are low-skilled labourers with relatively limited alternative employment opportunities<sup>66</sup> who are well suited to the flexibility and project focus of informal employment.

However, overseas workers represent a valuable resource in the sector and are often relied on to fill skills and labour shortages. Migrant workers constitute around 6% of the workforce in Great Britain. In some of the larger cities, such as London, Birmingham or Glasgow, this proportion may increase to around 25%<sup>67</sup>. In 2005 the Small Business Council suggested that the proportion of informal construction work was almost 47%. Further, over half (60%) of the income generated by this flexible, informal workforce finds its way back to the mainstream economy<sup>68</sup>.

<sup>61</sup> Markit/CIPS UK Construction PMI (March 2012) Press release

<sup>62</sup> Building (2012), *Market forecast: that sinking feeling*

<sup>63</sup> The Welsh Housing Quality Standard is a standard the Welsh Government expects all social housing to meet by 2012

<sup>64</sup> Construction Skills Network (2005), *Blueprint for UK Construction Skills, 2012-2014*

<sup>65</sup> <http://www.europeanbusinessreview.com/?p=3595>

<sup>66</sup> UK Contractors Group (2009), *Construction in the UK Economy*

<sup>67</sup> <http://www.hse.gov.uk/migrantworkers/construction.htm>

<sup>68</sup> 22nd Annual ARCOM Conference, Birmingham (2006), *Informal employment: a threat or an opportunity for the UK construction sector?*

## Chapter 4: National policies and strategies to contribute to the EU energy targets in buildings

This chapter outlines policies, legislation and other strategies across England, Northern Ireland, Scotland and Wales that are expected to contribute towards the EU 2020 energy targets in buildings. This section presents a snapshot of the current situation - however it should be noted that the green agenda is extremely fast-moving, with new technologies frequently evolving – therefore as the UK Governments are required to respond to these changes - new policies, legislation and strategies will continue to emerge over time.

### 4.1 NATIONAL ENERGY POLICY AND STRATEGY TO MEET THE 2020 TARGETS

Following the EU's commitment to the international climate change treaty ratified in Kyoto in 1997, establishing 'a smart, sustainable and inclusive economy'<sup>69</sup> has become one of its strategic objectives. In the field of energy, this involves the following targets:

- 20% reduction of greenhouse gas emissions in comparison with 1990 levels;
- 20% of energy from renewables;
- 20% increase in energy efficiency.

Since Kyoto, the UK has taken a robust position on the issue of climate change. The Climate Change Levy, which taxes the use of energy in industry, commerce and the public sector, is among many practical steps taken towards fulfilling Kyoto commitments.

The UK Government, and the previous administration stated its desire to lead from the front<sup>70</sup> and the Climate Change Act 2008 was the first long-term legally binding framework to tackle the dangers of climate change<sup>71</sup>. The Climate Change (Scotland) Act 2009 sets in statute the target to reduce Scotland's emissions of greenhouse gases by 80% by 2050.

While some progress has been made - highlighted as the 'easy wins' that have reduced emissions by 25% since 1990<sup>72</sup> - the Energy Act 2011 builds on this work with three principal objectives:

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<sup>69</sup> [http://ec.europa.eu/europe2020/index\\_en.htm](http://ec.europa.eu/europe2020/index_en.htm)

<sup>70</sup> For example, Chris Huhne, former Secretary of State for Energy and Climate Change in his forward to DECC's Carbon Management Plan, July 2011; and Ed Miliband, former Secretary of State of Energy and Climate Change in the introduction to The UK Low Carbon Transition Plan, July 2009

<sup>71</sup> [http://www.decc.gov.uk/en/content/cms/legislation/cc\\_act\\_08/cc\\_act\\_08.aspx](http://www.decc.gov.uk/en/content/cms/legislation/cc_act_08/cc_act_08.aspx)

<sup>72</sup> In the building sector, the mandatory introduction of more efficient condensing boilers and wider use of cavity wall insulation have reduced the UK's 2011 heating bill by £1.4 billion (compared to what - are we talking 1990?), The Carbon Plan: Delivering our low carbon future, December 2011

- tackling barriers to investment in energy efficiency;
- enhancing energy security; and
- enabling investment in low carbon energy supplies.

The Act launched The Green Deal, the UK Government’s primary mechanism for improving the energy efficiency of households and non-domestic properties in Great Britain which will be available from autumn 2012<sup>73</sup>.

The Green Deal creates a new financing mechanism, which in principal will allow any domestic or non-domestic property to improve its energy efficiency through a range of specified improvements. Green Deal applications will be reliant on the Golden Rule, which specifies that expected savings will be equal to or greater than the cost of improvements<sup>74</sup>. Where homes fail to achieve the Golden Rule, and where householders are particularly vulnerable, the UK Government has introduced a support mechanism, the new Energy Company Obligation (ECO)<sup>75</sup>.

Existing obligations to reduce carbon emissions (the Carbon Emissions Reduction Target<sup>76</sup> (CERT) and Community Energy Saving Programme<sup>77</sup> (CESP)) expire at the end of 2012 and will be replaced by ECO. The Energy Efficiency Partnership for Buildings (EEPB) has been established as a non-profit network connecting potential Green Deal providers, financiers and suppliers. The Department of Energy and Climate Change (DECC) has allocated responsibility to the EEPB for co-ordinating 4 Green Deal advisory groups. It will also advise DECC on the implementation of the microgeneration strategy.

Almost 14% of all households or nearly 3 million homes in England<sup>78</sup> make up the private rental sector, whose tenants, under the Energy Act 2011 and from April 2016, will be able to ask for energy efficiency improvements. Where the Green Deal and/or ECO are available, private residential landlords will be unable to refuse any reasonable request. From April 2018, it will be unlawful to rent out a residential or business premise that does not reach a minimum energy efficiency standard (the intention is for this to be set at EPC rating “E”<sup>79</sup>).

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<sup>73</sup> The Energy Act 2011

<sup>74</sup> DECC (2011), *What measures does the Green Deal cover?*

<sup>75</sup> DECC: *“ECO will place one or more obligations on energy companies requiring them to generate a specific amount of credit by facilitating the installation of energy efficiency measures in homes in Great Britain before a set deadline. ECO has been designed to fit within the Green Deal framework and provide support, in the domestic sector, where Green Deal finance alone is not enough”*

<sup>76</sup> A programme introduced by the UK Government which obliges energy suppliers to increase the uptake of energy efficiency and carbon reduction measures in the Household sector, specifically focusing on vulnerable households

<sup>77</sup> A programme introduced by the UK Government which requires gas and electricity suppliers and electricity generators to deliver energy saving measures to domestic consumers. Target areas are the most economically deprived in Great Britain. CESP is expected to deliver £350 million worth of energy efficiency measures to around 90,000 homes in 100 schemes in the most economically deprived areas of England, saving around 100,000 tonnes of CO<sub>2</sub> per annum

<sup>78</sup> <http://www.communities.gov.uk/housing/privaterentedhousing/>

<sup>79</sup> Energy performance certificates (EPCs) rate the current energy efficiency and carbon dioxide emissions of a domestic building and give a comparison with a potential, improved rating dependent on the implementation of energy saving measures. Ratings use grades from “A” to “G” with “A” being the most efficient. The average efficiency grade is ‘D’

The UK Government claims that the Green Deal will add a welcome boost to the building industry, by attracting capital investment of £15 billion in the residential sector, and by supporting around 250,000 jobs<sup>80</sup>. However, the Green Deal is not without its critics, and recent issues raised include:

- The Green Deal is based on the assumption that the householder will always save more than they pay, but there is no guarantee that the occupancy and heating patterns used in the assessment will match actual energy consumption<sup>81</sup>;
- The Golden Rule works best in households where energy consumption is high. Households where energy is already used efficiently are less likely to be Golden Rule-compatible<sup>82</sup>;
- The Green Deal offers its applicants guarantees or warranties which cover the full 25-year period of the contract. This contrasts starkly with the current practice of guaranteeing works for 3 to 6 years. It is not unreasonable to suggest that some measures covered under the Green Deal have life expectancies which would mean that they require replacing within the 25-year period. To factor that cost in would invalidate the Golden Rule<sup>83</sup>;
- The UK Government is battling with contradictions in policy and in the marketplace. While consumers demonstrated an appetite for solar photovoltaic panels and the Feed-In-Tariff, take up of professional cavity wall and loft insulation fell by 30% in 2010<sup>84</sup>. It is uncertain whether the incentive offered by the Green Deal will affect householder demand, despite the Committee on Climate Change's view of its potential;
- Further concerns have been expressed by the UK Green Building Council. In February 2012 they wrote to the Secretary of State for Energy and Climate Change expressing unease about perceived lack of transition arrangements between CERT and ECO. They also cite DECC's Impact Assessment, which estimates that the loft insulation market will shrink by 93% and the cavity wall insulation market will reduce by 66% following the introduction of ECO in 2012<sup>85</sup>;
- Minimum performance standards in the letting market, and support for energy efficiency measures through the Green Deal may have a positive impact, but more work needs to be done to clarify the timescale and scope of the necessary secondary

<sup>80</sup> [http://www.decc.gov.uk/en/content/cms/news/gb\\_gdsa\\_speech/gb\\_gdsa\\_speech.aspx](http://www.decc.gov.uk/en/content/cms/news/gb_gdsa_speech/gb_gdsa_speech.aspx)

<sup>81</sup> <http://www.fgould.com/uk/research-and-features/article/green-deal-just-how-green-deal-it/>

<sup>82</sup> <http://www.fgould.com/uk/research-and-features/article/green-deal-just-how-green-deal-it/>

<sup>83</sup> <http://www.fgould.com/uk/research-and-features/article/green-deal-just-how-green-deal-it/>

<sup>84</sup> Aldersgate Group (2012), *Building Britain: The path to sustainable growth for the built environment*

<sup>85</sup> <http://www.ukgbc.org/news/uk-gbc-sounds-eco-alarm> Other signatories include Which? and Friends of the Earth

legislation<sup>86</sup>.

Furthermore similar schemes are already in existence. England's Warm Front scheme offers a package of heating and insulation measures for homes, to individuals on specified income-related benefits. Similar arrangements are in place in Northern Ireland (Warm Homes Scheme); Scotland (Energy Assistance Package Scheme); and Wales (Nest Fuel Poverty Scheme<sup>87</sup>). DECC also launched the Warm Home Discount Scheme<sup>88</sup> in April 2011, with up to £1.1bn expected to benefit over 2 million low income households every year – until the scheme's end in March 2015.

### Heat strategy

A number of stages were outlined in the UK Government's Carbon Plan which was published in December 2011:

- Until the end of 2019 the Government plans to focus on improving the energy efficiency of buildings and industry. It will pave the way for a prompt adoption of renewable heat measures by developing the supply chain and encouraging innovation in this area;
- During the 2020s and 2030s low carbon heat technologies must be widely implemented in domestic and non-domestic building stock. The UK Government will act as a facilitator, supporting the market and ensuring that costs to consumers and industry are managed effectively;
- In the longer term, the UK Government plans to tackle the more challenging areas of low carbon heat, for which there may not be immediate solutions.

Published in March 2012, DECC's Strategic Framework for Low Carbon Heat builds on the Carbon Plan, with a focus on the take up of renewable heat, development of the supply chain and support for innovation. Its aim is to keep costs for customers and industry to a minimum. The strategy includes an objective to ensure that heat for buildings is totally carbon-free by 2050. Currently DECC is investigating the potential of low carbon heat networks, and has launched its National Heat Map<sup>89</sup> to support planning for potential district heating networks.

### Renewable energy sources

The Directive on renewable energy<sup>90</sup> states that by 2020 the EU will source 20% of its energy from renewable sources.

The EU has said that individual Member State targets are 'ambitious'. Compared to other

<sup>86</sup> Aldersgate Group (2012), *Building Britain: The path to sustainable growth for the built environment*

<sup>87</sup> The Welsh Government plans to invest up to £100 million in Nest over the next 5 years

<sup>88</sup> Funded by participating energy suppliers

<sup>89</sup> <http://ceo.decc.gov.uk/nationalheatmap/>

<sup>90</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

Member States<sup>91</sup>, the UK's starting point is low, and it has committed to achieving 15% of its energy from renewable sources in 2020<sup>92</sup>, with the following breakdown:

- Approximately 30% of electricity demand, including 2% from small-scale sources;
- 12% of heat demand;
- 10% of transport demand<sup>93</sup>.

The UK Government outlined its approach to renewables in the 2011 Renewable Energy Roadmap, and sees this working in conjunction with the parallel activity being carried out by the devolved administrations<sup>94</sup>:

**Table 3: Regional objectives<sup>95</sup>**

<b>Scotland</b>	➔	working towards renewable sources to generate the equivalent of 100% of Scotland's gross annual electricity consumption by 2020 and for renewable sources to provide the equivalent of 11% of Scotland's heat demand by 2020 <sup>96</sup>
<b>Wales</b>	➔	aims to double its renewable electricity by 2025, with 4GW from marine energy
<b>Northern Ireland</b>	➔	targets of 40% for renewable electricity and 10% renewable heat by 2020 <sup>97</sup>

The National Renewable Energy Action Plan, published in 2009, adopted a UK renewable policy framework based on three key components:

- Financial support for renewables;
- Unblocking barriers to delivery;
- Developing emerging technologies.

Later policy statements, such as the 2011 Roadmap outline a number of targeted and practical actions to accelerate renewable energy in the UK.

### Feed-in-Tariffs

In the UK, the generation of electricity from renewable sources is regulated through a combination of a Feed-In Tariff (FIT) system<sup>98</sup> - (the UK Government's support mechanism

<sup>91</sup> For example, Denmark has a target of 30% for 2020 (17% in 2005 and 19.7 in 2009)

<sup>92</sup> In comparison to 1.3% in 2005 and 2.9% in 2009.

<sup>93</sup> DECC (2009), *National Renewable Energy Action Plan*

<sup>94</sup> DECC (2011), *UK Renewable Energy Roadmap*

<sup>95</sup> DECC (2011), *UK Renewable Energy Roadmap*

<sup>96</sup> Data from the Scottish Government

<sup>97</sup> DECC (2011), *UK Renewable Energy Roadmap*

for renewable electricity generating technologies<sup>99</sup>) and a quota system in terms of a quota obligation and a certificate system.

With strong UK Government support<sup>100</sup> the scheme has been very successful. Prior to its introduction, 26MW of energy was derived from solar sources, and this increased to 1,000MW in February 2012<sup>101</sup>. Such a positive response to the initiative was unexpected and led to a steep reduction in installation costs – prompting a Government review in October 2011. In December 2011 in order to control costs, and while this consultation was still ongoing, the UK Government announced a reduction of generation and export tariffs – a decision which has since been ruled as unlawful<sup>102</sup>. The UK Government appealed against this ruling, seeking legal authority to sustain its amendment, but was overruled. As a result, the reduced Feed in Tariff rate came into effect in March 2012 and the rate will be further reduced in August 2012, with further future reductions expected to reflect the decreasing cost of PV technology.

However, DECC also amended the energy efficiency criteria. Applicants who wish to install solar panels after 1 April 2012 require an Energy Performance Certificate (EPC) rating of 'D' or above for their installation to qualify for full FIT. Previously, a 'C' rating was needed, but this is considered to be 'impractical'. DECC estimates that around 50% of all properties will achieve a 'D' rating<sup>103</sup>.

### Smart meters

The UK Government also plans to use tariffs to incentivise a reduction of energy usage in its roll-out of smart meters. It is thought that consumers will benefit through a better understanding of their energy use, enabling behaviour modification and a reduction in energy usage and spending. The aim is to equip every home with a smart meter by the end of 2020. Such an initiative is intended to transform the energy retail market, derive better services from energy companies, reduce energy use and carbon emissions and enable the development of new products and solutions.

While the smart meter roll out is expected to bring benefits of more than £7 billion in energy savings over the next 20 years<sup>104</sup>, the initiative is not without its critics. In January, consumer group Which? urged the UK Government to postpone the scheme – it found that costs were spiralling, and claimed that the UK Government, rather than energy companies,

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<sup>98</sup> Under the feed-in tariff, generators whose systems have a capacity of less than 5MW and generate electricity through anaerobic digestion, hydro technology, solar photovoltaic or wind sources receive a fixed amount for each kWh they generate, and an additional fixed payment per kWh they export to the grid

<sup>99</sup> The Labour administration launched FITs in April 2010

<sup>100</sup> For example Greg Barker, Minister of State for DECC in his forward to the consultation on the microgeneration strategy, December 2010

<sup>101</sup> <http://www.guardian.co.uk/environment/2012/feb/23/feed-in-tariff-solar-breakthrough>

<sup>102</sup> <http://www.greenwisebusiness.co.uk/news/supreme-court-rejects-decc-solar-fit-appeal-bid-3184.aspx>

<sup>103</sup> [http://www.decc.gov.uk/en/content/cms/news/pn12\\_010/pn12\\_010.aspx](http://www.decc.gov.uk/en/content/cms/news/pn12_010/pn12_010.aspx)

<sup>104</sup> HM Treasury and BIS (March 2011), *The Plan for Growth*



should coordinate smart meter installation<sup>105</sup>.

An MPs' report followed which stated that "*No transparent mechanism presently exists for ensuring savings to the supplier are passed on to consumers, and the track record of energy companies to date does not inspire confidence that this will happen*"<sup>106</sup>. However, the UK Government sees Smart Meters as a key aspect of the 'Smart Agenda'. On 24 April 2012 Charles Hendry, Minister of State for the Department of Energy and Climate Change reiterated the Smart Meter plans, and stated the Department's objective to 'bring forward the planned completion of the rollout to 2019; at least one year ahead of previously published plans'<sup>107</sup>.

A range of other strategies and policies are already in place or have recently been launched that contribute towards the 2020 energy targets:

- To support the increasing importance of tackling climate change and meeting ambitious targets to reduce emissions, Low Carbon Economic Areas (LCEA) were introduced through the Low Carbon Transition Plan<sup>108</sup>. The Plan presented LCEAs as an opportunity to build on key industrial strengths of particular areas to accelerate low carbon economic activity. The LCEAs offer a chance to increase growth, but also raise the profile of the UK as an international leader within the low carbon economy. Each LCEA is working through a 5-year plan, running through until 2014 to harness the opportunities provided by the move to a low carbon economy;
- As an EU member state, the UK must participate in the EU Emissions Trading System to set an overall cap (National Allocation Plan, or NAP) on total emissions allowed from installations covered by this scheme;
- Climate Change Agreements (CCAs) award discounts from the Climate Change Levy for achievement of carbon reduction targets. These are open only to businesses with intensive energy use. Similarly, the CRC Energy Efficiency Scheme<sup>109</sup> is mandatory to large organisations that account for approximately 10% of the UK's emissions. An annual league table ranks participants by their energy efficiency performance;
- In July 2011 National Policy Statements for Energy outlined criteria against which major energy-related projects will be assessed;
- In April 2012, the UK Bioenergy Strategy described a commitment to offer *genuine* carbon savings by 2050, and beyond. It focuses on the need to supply financial incentives and ensure that bioenergy can be developed and implemented in a cost effective manner;

<sup>105</sup> <http://www.bbc.co.uk/news/uk-16565100>

<sup>106</sup> <http://www.bbc.co.uk/news/uk-politics-16581812>

<sup>107</sup> Charles Hendry speech at Smart Grids GB even 24 April 2012

<sup>108</sup> HM Government (2009), *National Strategy for Climate Change and Energy*

<sup>109</sup> Formerly the Carbon Reduction Commitment

- The UK's Green Investment Bank<sup>110</sup> is intended to act as a catalyst for private sector investment into a green economy;
- Introduced in 2002, the Renewables Obligation (RO)<sup>111</sup> is currently the UK Government's only financial mechanism to incentivise deployment of large-scale renewable electricity generation. Support is offered for a period of 20 years, and the scheme will close to new generation in March 2017. In April 2010 the end date for the scheme was extended from 2027 to 2037;
- Proposals to reform the electricity market incorporate a Carbon Price Floor – which is intended to ensure fair prices for carbon and encourage investment. The White Paper *Planning our Electric Future* also introduces an Emissions Performance Standard<sup>112</sup> and longer-term financial incentives for investment into low carbon electricity generation of all types for buildings. The first low carbon projects to be supported via these proposals are expected to be implemented by 2014.

The Energy Efficiency Deployment Office (EEDO) will develop a new energy efficiency strategy by the end of 2012.

#### Devolved nations

The Welsh Government recognises the need for a “whole system transition to low carbon energy”<sup>113</sup>. The Welsh Government's Renewable Energy Route Map for Wales in 2008 outlined plans to move Wales towards self-sufficiency in renewable electricity. The Welsh Government has committed to improvements to the planning system that will simplify processes by April 2013 – to coincide with the launch of Wales' Single Environment Body.

The Welsh Government has also pledged investment of up to £45 million in Phase 2 of its energy saving programme – Arbed<sup>114</sup> - over the next 3 years. The Welsh Government is supporting a range of energy developments including a 299MW biomass power plant in Holyhead, and a 4.5GW offshore wind zone to complement its Energy Island activities. Furthermore Wales' Low Carbon Research Institute will receive investment of £19 million.

The Scottish Government's Green Jobs blueprint, published in 2009 cites potential for 16,000 jobs in energy-related opportunities in Scotland over the next decade. The Scottish Government is also strongly supportive of energy efficiency developments notably in wave and wind technologies. The Scottish Government's Energy Efficiency Action Plan<sup>115</sup> sets out distinct key actions including improvements to the energy efficiency of housing stock;

<sup>110</sup> Active from April 2012

<sup>111</sup> The RO is a mandatory requirement for licenced electricity suppliers in the UK to source a proportion of customers' electric from renewable sources. The proportion increases annually and failure to comply results in a financial penalty. Three separate but complementary schemes run for England & Wales, Northern Ireland and Scotland

<sup>112</sup> Set at 450g CO<sub>2</sub>/kWh

<sup>113</sup> Welsh Government (2012), *Energy Wales: A Low Carbon Transition*

<sup>114</sup> Meaning “Save”

<sup>115</sup> Scottish Government (2010), *Conserve and Save: Energy Action Plan*

development of marketing campaigns relating to energy efficiency; maintenance of a Climate Change Behaviours Research Programme; and dedicated support for businesses including SMEs in relation to energy efficiency (including the establishment of a single energy and resource efficiency service). The Scottish Government's Low Carbon Economic Strategy identified the need for a co-ordinated approach via the Scottish Energy Advisory Board, to bring Ministers and industry stakeholders together.

Progress against the Scottish Government's Energy Efficiency Action Plan is being documented via a series of reports, the latest of which identified a number of key achievements including: an increase in funding for Scottish Government fuel poverty and energy efficiency programmes<sup>116</sup>. The Scottish Government's 2020 Routemap for Renewable Energy outlines actions intended to meet Ministerial targets of 100% renewable energy generation.

In Northern Ireland the Green New Deal Group aims to embed energy efficiency measures into 100,000 homes over a 3-year period. The Federation of Master Builders in Northern Ireland has strongly urged the Northern Ireland Executive to expand its support for the Green New Deal<sup>117</sup>. Within its Programme for Government 2011-2015 the Executive has already pledged to improve thermal efficiency of Housing Executive stock, and ensure full double glazing throughout its properties. Furthermore there is a commitment that all new social housing in Northern Ireland must meet Code 4 for Sustainable Homes by 2014, and Code 6 by 2016 (from its current level of Code 3)<sup>118</sup>. An Energy Services Agreement Forum summarises voluntary agreements of energy suppliers to provide enhanced energy efficiency services<sup>119</sup>.

However stakeholders have identified a number of concerns in relation to policy in Northern Ireland due to a fragmented approach. Responsibility for energy is held within the Department of Enterprise, Trade and Investment, yet the Green New Deal sits within the Department of Social Development - whilst ownership for skills is with the Department of Employment and Learning. Stakeholders are also concerned by delays in policy development (compared with England); some feel that Northern Ireland is at a disadvantage as it does not have the Feed-In Tariffs and has only potential, currently, for the Renewable Heat Incentive.

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<sup>116</sup> Scottish Government (2012), *Second Progress Report on the Energy Efficiency Action Plan*

<sup>117</sup> Federation of Master Builders (2011), *Northern Ireland Manifesto for Building for Success*

<sup>118</sup> Northern Ireland Executive (2010), *Sustainable Homes Report*

<sup>119</sup> Ecorys (2011), *Research Study to Determine the Skills Required to Support Potential Economic Growth in the Northern Ireland Sustainable Energy Sector*

## 4.2 ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE AND ITS 2010 RECAST

The Energy Performance of Buildings Directive<sup>120</sup> (EPBD) was implemented by the European Parliament in 2003 and was particularly relevant for developers, owners and operators of domestic and non-domestic buildings in the UK. Its influence can be seen in Part L Building Regulations<sup>121</sup>, and in the issuing of energy performance certificates.

There were 4 key strands to the EPBD which were intended to promote the improvement of the energy performance of buildings using cost effective measures:

### Establishment of a calculation methodology

- a. Standard Assessment Procedure (SAP 2009)<sup>122</sup> is adopted by the UK Government as part of the UK national methodology for calculation of the energy performance of buildings. It is used to demonstrate compliance with building regulations for self-contained dwellings of any size - Part L (England and Wales), Section 6 (Scotland) and Part F (Northern Ireland) - and to provide energy ratings for dwellings. DECC has proposed the formation of an SAP Integrity Group to work towards on-going revision of the procedure.
- b. Simplified Building Energy Model (SBEM) was developed by BRE<sup>123</sup> for the UK Government and is designed to produce consistent and reliable evaluations of energy use in non-domestic buildings for building regulations compliance and for Building Energy Performance Certification purposes<sup>124</sup>. While these models were EPBD-compliant, it is thought that there may now be 'grey areas'<sup>125</sup> in terms of the requirements set out in the 2010 EPBD recast<sup>126</sup>. In BIS's response to its Innovation and Growth Team's (IGT) final report on low carbon construction<sup>127</sup>, DECC and the Department for Communities and Local Government (DCLG) take joint responsibility for seeking industry advice on the development and maintenance of SAP and SBEM tools on an on-going basis. They were also tasked with reviewing SBEM in the light of the proposed changes to the Building Regulations due to take place in 2013. This included the development of a formal process for product verification integrating new technologies into SBEM.

<sup>120</sup> Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings  
<sup>121</sup> Part J in Scotland and F in Northern Ireland

<sup>122</sup> The SAP rating is based on the energy costs associated with space heating, water heating, ventilation and lighting. Cost savings from energy generation technologies such as micro-CHP, heat pumps, solar collectors, photovoltaics and biomass boilers are deducted. Floor area is taken into account so that the rating is comparable across buildings of different sizes. The SAP rating is expressed on a scale of 1 to 100, the higher the number the lower the running costs

<sup>123</sup> Formerly known as the Building Research Establishment. <http://www.bre.co.uk/page.jsp?id=1710>

<sup>124</sup> Using information about the building geometry, construction, use, building services for heating, air-conditioning, ventilation and lighting, and taking energy generation technologies into account, it calculates monthly energy use and carbon dioxide emissions

<sup>125</sup> This is of concern to commercial organisations such as ecmk and their clients but the 'grey areas' appear to be as yet unspecified. In March 2012, BRE were not yet fully aware of any changes that will be needed to be made to SBEM as a result of the EPBD recast, and none have been implemented

<sup>126</sup> Zero Carbon Hub and NHBC Foundation (2011), *Introductory guide to the recast EPBD-2* states that "some development work will be required in order to ensure full compliance ... with EPBD-2".

<sup>127</sup> IGT (2010), *Low Carbon Construction – final report*

## Energy performance requirements

When the EPBD was implemented, it required EU Member States to specify, police and review minimum energy performance requirements for new and existing buildings. However, given that buildings are responsible for 40% of total energy consumption in the European Union<sup>128</sup>, and almost 50% in the UK<sup>129</sup>, the Commission concluded that more could be done to make carbon savings in this area. As a result, the 2010 EPBD made the minimum energy performance requirements more stringent:

- As of 31 December 2020 new buildings in the EU will have to consume 'nearly zero'<sup>130</sup> energy and the energy will be 'to a very large extent' from renewable sources;
- Public authorities that own or occupy a new building should set an example by building, buying or renting such 'nearly zero energy building' as of 31 December 2018;
- Performance standards must be set for new and replacement 'technical building systems' (heating, hot water, air conditioning and large ventilation);
- A harmonised calculation methodology to increase Member State minimum energy performance requirements towards a cost-optimal level is set out in the Directive. This is subject to further refinement, but Member States are required to ensure that the gap between current requirements and cost optimal requirements is less than 15%;
- Member States will be required to introduce penalties for non-compliance. Member States shall lay down the rules on penalties applicable to infringements of the national provisions adopted pursuant to this Directive and shall take all measures necessary to ensure that they are implemented. The penalties provided for must be effective, proportionate and dissuasive. Member States shall communicate those provisions to the Commission;
- Procedures for issuing energy performance certificates and for performance measurement must be tightened.

The revised EPBD aimed to improve performance standards, but there is no specific target for the renovation of existing buildings; instead, Member States must encourage refurbishment and the public sector should lead by example in order to achieve more very low energy buildings. Some organisations, such as The European Council for an Energy Efficient Economy (eceee) are concerned that this does not go far enough, and that further

<sup>128</sup> Zero Carbon Hub and NHBC Foundation (2011), *Introductory guide to the recast EPBD-2*

<sup>129</sup> <http://www.communities.gov.uk/planningandbuilding/theenvironment/energyperformance/>

<sup>130</sup> The EPBD Directive defines a nearly zero-energy building as one that has "a very high energy performance", and for which "the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced onsite or nearby". Commentators often criticise this definition because it is open to interpretation, particularly when distinguishing between carbon and energy

energy savings could be made in this area<sup>131</sup>.

### Energy performance certificates (EPCs)

The EPBD stated that EPCs should be made available whenever buildings are constructed, sold or rented out. This was endorsed in the recast, and it was stated that public authorities must implement the recommendations. Public buildings, including smaller ones must display their EPCs. Additionally, all sale and rental advertisements must include the headline energy performance indicator.

The UK's Zero Carbon Hub concludes that there seems to be little need to re-define the energy performance certificate or display energy certificate (DEC) for the EPBD recast, although there is some debate over whether or not public buildings will henceforth have to display an operational rating (i.e. DEC) or merely an asset rating (design-stage EPC)<sup>132</sup>.

### Inspections of boilers and air-conditioning

The EPBD gave the UK Governments two options regarding heating system inspections: either a specified inspection regime, or to provide users with advice on replacement boilers, modifications and/or alternative solutions. It is reasonable to assume that following the revised EPBD, the UK will continue to comply via the advice option<sup>133</sup>. The revision includes a similar advice option for air-conditioning systems. The UK Government has not yet confirmed its preferred option for air-conditioning inspection compliance<sup>134</sup>.

### Zero carbon

In July 2007 the then UK Government published their "Building a Greener Future" statement. This launched the following policy commitments:

- all new build homes will be zero carbon from 2016;
- all non-domestic new builds will be required to have zero net carbon emissions from 2019, with earlier dates for schools (2016) and public sector buildings (2018).

Since then, progress towards a realistic definition for zero carbon homes and buildings has been limited. It is a measure of the difficulty of the task that nearly 5 years since the announcement, and with less than 5 years to the deadline for homes, a workable definition has not been finalised.

Initially, a zero carbon home was seen to one that meets the requirements of Level 6 of the Code for Sustainable Homes, which to date has only been achieved by a handful of 'exemplar' schemes. By this standard, homes are viewed as individual energy 'islands' which

<sup>131</sup> [http://www.eceee.org/buildings/EPBD\\_Recast](http://www.eceee.org/buildings/EPBD_Recast)

<sup>132</sup> Zero Carbon Hub and NHBC Foundation (2011), *Introductory guide to the recast EPBD-2*

<sup>133</sup> Zero Carbon Hub and NHBC Foundation (2011), *Introductory guide to the recast EPBD-2*

<sup>134</sup> Zero Carbon Hub and NHBC Foundation (2011), *Introductory guide to the recast EPBD-2*

must generate all the power and heat they need. Following consultation in 2008, it was decided that level 6 was an expensive option which would be unattainable on many sites. DCLG is working with the Zero Carbon Hub to assist in the development of a new definition for zero carbon to both 'reflect the ambition of the 2016 target, whilst being technically achievable and cost effective for house-builders'.

### 4.3 RELEVANT NATIONAL BUILDING REGULATIONS AND CODES

As previously stated, there is broad acceptance of the carbon saving potential offered in the building sector, both in new build and existing buildings. A major driver in this area is the planning process which enables the UK Government to support its wider economic, social and environmental objectives, and influence the construction and related industries. Because of the speed at which policy and technology is evolving, Part L<sup>135</sup> of the UK building regulations is subject to frequent consultation and change (the next amendment is due in 2013). A recent consultation about the UK building regulations closed in April 2012. Proposals that industry were asked to respond to included updating Part L in relation to tighter carbon dioxide emission standards for new homes and non-domestic buildings; to take the next step towards 'zero carbon' standards; and tighter performance standards for works to existing buildings; requirements for additional energy efficiency improvements to be carried out when other specified works are planned and Green Deal finance is available as an option to meet the up-front costs<sup>136</sup>. The UK Government's current methodology is one of deregulation. Approved documents are now less prescriptive than previously<sup>137</sup>.

The 2010 part L is designed to cut CO<sup>2</sup> emissions and play a crucial role in achieving the UK Government's zero carbon policies. Key features are:

- 25% reduction in CO<sup>2</sup> relative to 2006 Part L target;
- Savings of £100 a year on heating bills;
- Emphasis on improved actual rather than predicted carbon performance<sup>138</sup>

The authority to set building regulations for Wales was transferred to Welsh Ministers from December 2011. The policy of the Welsh Government is to embed changes to the building regulations that will support the achievement of zero carbon new build.

The Scottish Government also holds responsibility for the creation of building regulations (within its Building Standards Division). Technical handbooks in relation to building

<sup>135</sup> Part L of the Approved Documents – dealing with conservation of fuel and power

<sup>136</sup> <http://www.communities.gov.uk/publications/planningandbuilding/brconsultationsection2>

<sup>137</sup> ODPM (2004), *Planning policy 22* asserts that regional spatial strategies and local development documents should contain policies designed to promote and encourage, rather than restrict, the development of renewable energy resources. Regional planning bodies and local planning authorities should recognise the full range of renewable energy sources, their differing characteristics, locational requirements and the potential for exploiting them subject to appropriate environmental safeguards

<sup>138</sup> In Autumn 2010 IGT recommended that a consensus on both modelled and actual performance improvement data should be established from the various previous and current studies, through a knowledge-sharing process, to inform what actions need to be taken to deliver the overall target

standards were updated in 2011 to incorporate sustainability requirements for domestic and non-domestic buildings. In Northern Ireland, the Government's Department of Finance and Personnel holds authority to create building regulations (the most recent document was created in 2000).

Therefore any revisions to the UK building regulations will apply to England only (as from January 2012). The UK and Scottish Governments<sup>139</sup> believe that revised building regulations will increase the standards of construction and improve the skills base within the construction industry<sup>140</sup>. Through building regulations, the UK Government hopes to encourage innovation and engender a culture of on-going improvement while creating and sustaining a market for new products and solutions in the field of energy efficiency.

The result is a perceived reduction in the levels of ambition evidenced by Part L standards for 2013<sup>141</sup>. Moreover, it is likely that the statutory elements of the Approved Documents will continue to be conservative in their demands. This is based on the UK Government's stated intention to 'ensure that it remains viable to build new houses' – householders will be only be accountable for 'those carbon dioxide emissions that are covered by Building Regulations' and the UK Government 'will provide cost-effective means through which they can do this'.<sup>142</sup>

### The Code for Sustainable Homes

The Code for Sustainable Homes (the Code) was implemented in the UK May 2008 and measures the sustainability of a new home against categories of sustainable design (energy/CO<sup>2</sup>, water, materials, surface water runoff, waste, pollution, health and well-being, management and ecology). It rates the 'whole home' as a complete package. The mandatory aspect of the Code was suspended, along with Home Information Packs in May 2010<sup>143</sup>.

At the time of writing, The Code remains the entirely voluntary national standard for the sustainable design and construction of new homes (applicable in England, Wales and Northern Ireland). It is intended to help promote higher standards of sustainable design above current Building Regulations minima. While the Code is voluntary, providing a rating against the Code is mandated by legislation. To date the Code has not been adopted in Scotland, where EcoHomes<sup>144</sup> (the precursor to the Code) still applies.

<sup>139</sup> <http://www.scotland.gov.uk/Publications/2010/11/15085756/7>

<sup>140</sup> <http://www.carbontrust.co.uk/policy-legislation/business-public-sector/pages/building-regulations.aspx>

<sup>141</sup> The Aldersgate Group (2012), *Building Britain: The path to sustainable growth for the built environment*

<sup>142</sup> HM Treasury and BIS (2011), *The Plan for Growth*

<sup>143</sup> Home Information Packs (HIPs) were introduced under Part 5 of the Housing Act 2004. There is separate legislation for Scotland that requires anyone selling a property to provide a Home Report. The pack comprised a set of documents including an Energy Performance Certificate, local authority searches, title documents and guarantees. The Localism Act 2011 formally repealed the HIP legislation on 15 January 2012

<sup>144</sup> Similar to the Code, EcoHomes is an assessment tool for the environmental performance of buildings, which is managed by BREEM. The scheme is voluntary



The Code should not be confused with Zero Carbon policy; it is not mandatory, and is not a set of regulations. The only circumstances where the Code is obligatory are:

1. where Local Authorities stipulate a requirement in their local plans, or;
2. where affordable housing is funded by the HCA (Homes and Community Agency), which requires homes to be built to Code Level 3. The level 3 energy standard is now incorporated in the Building Regulations<sup>145</sup>.

### Concerns for the future

#### *Energy performance and enforcement*

Concerns about the performance gap have been partly addressed by the 2010 revision to Part L, for example, the problems caused by unfilled party wall cavities have been included in the updated version of SAP 2009.<sup>146</sup> However, performance testing and control and subsequent enforcement procedures continue to challenge industry and Regulators, and this is likely to be a focus of the revisions planned for the UK Part L in 2013.

Additionally, the IGT recommend that the UK Government should examine the depth and effect of non-compliance. They suggest that compliance mechanisms should aim to ensure the greatest impact on carbon emissions at the lowest cost to business, and that EPBD and Part L compliance mechanisms should be revised accordingly<sup>147</sup>.

#### *Building regulations – inconsistency of interpretation*

Building regulations play an important role in the delivery of a zero carbon policy. If this is extended to an attempt to address climate change, limitations may become apparent. According to the Royal Institute of British Architects (RIBA), local planning authorities produce their own interpretation of standards with accompanying criteria for obtaining planning permission<sup>148</sup>.

#### *Embodied carbon*

The focus on net carbon reduction through, for example, air-tightness and increased insulation, and implementing renewable energy sources such as solar thermal hot water systems has led to a greater efficiency in the operational carbon emissions of a building. This work has highlighted the need to take a wider view of the carbon impact of buildings, and to take into account the issue of embodied carbon. This is important because, as operational carbon levels drop, embodied carbon assumes a

<sup>145</sup> DCLG (2010), *Code for sustainable homes: a cost review*

<sup>146</sup> Aldersgate Group (2012), *Building Britain: The path to sustainable growth for the built environment*

<sup>147</sup> IGT (2010), *Low Carbon Construction – final report*

<sup>148</sup> RIBA (2010), *Response to Zero Carbon for New Non-domestic Buildings: Consultation on Policy Options*

higher proportion of the carbon output of a building – for a low energy house this could be 30-40%<sup>149</sup>, whereas it could be as high as 50% for a typical office building<sup>150</sup>.

At present the UK building regulations Part L does not attempt to regulate embodied carbon, but there have been recent calls for standardised measurement procedures, and a recent UK Government policy report<sup>151</sup> has suggested that when possible, these should be included in the regulation framework. Considering the implications of whole-life carbon could also provide opportunities for the industry. It will engender supply chain efficiency and improved carbon efficiency in the fabric manufacture, construction and end-of-life processes.

#### 4.4 ENVISAGED CONTRIBUTION OF THE BUILDING SECTOR TO 2020 TARGETS

Of the six main anthropogenic gases which have been identified as greenhouse gases and have been targeted for reduction by the Kyoto Protocol and the Climate Change Act 2008, around 80% is represented by CO<sup>2</sup><sup>152</sup>. The other 20% is made up of methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>)<sup>153</sup>. Because the building sector's contribution to non CO<sup>2</sup> greenhouse gases (as a result of energy and fuel use) is minimal, the building sector can contribute most productively to greenhouse gas reduction by focusing on its CO<sup>2</sup> emissions<sup>154</sup>.

Using a broad evidence base, with figures from Environmental Accounts, National Inventory and Carbon Reporting Framework (CRF) figures in addition to DECC and industry, the IGT attempted to approximate the magnitude of CO<sup>2</sup> that the process of construction can influence. The UK Green Building Council carried out a similar exercise, based on the UK greenhouse gas inventory 1990 – 2006, which estimates non-domestic CO<sup>2</sup> emissions, and the findings of the two exercises were broadly compatible<sup>155</sup>.

IGT took a comprehensive approach, taking into account existing evidence on CO<sup>2</sup> emitted throughout the life cycle of a building, as seen in Figure 7. Their conclusions were as follows:

- The building sector has significant influence over CO<sup>2</sup> emissions – almost 47%;
- At over 80%, In-Use building emissions accounts for the largest proportion of total CO<sup>2</sup> emissions that the building sector can influence;
- Manufacturing accounts for the largest amount of emissions within the construction process.

<sup>149</sup> Willmott Dixon Group (2010), *Embodied energy*

<sup>150</sup> Aldersgate Group (2012), *Building Britain: The path to sustainable growth for the built environment*

<sup>151</sup> IGT (2010), *Emerging Findings*

<sup>152</sup> IGT (2010), *Estimating the amount of CO<sub>2</sub> emissions that the construction industry can influence*

<sup>153</sup> Strategic Forum for Construction and Carbon Trust (2010), *Scoping paper: Construction carbon 15% target by 2012*

<sup>154</sup> Through manufacturing, the construction industry does produce non-CO<sub>2</sub> greenhouse gas emissions, and these are covered by the Climate Change Act 2009

<sup>155</sup> IGT (2010), *Estimating the amount of CO<sub>2</sub> emissions that the construction industry can influence*

Assuming, therefore, that the building sector does have influence over CO<sup>2</sup> emissions, the IGT looked at the way in which this is distributed amongst sub-sectors (shown in Table 4).

**Figure 7: Estimated distribution of CO<sup>2</sup> emissions during a building’s life**

**Design** – CO<sup>2</sup> is emitted during the design process, but in-use reductive measures are achievable by design.

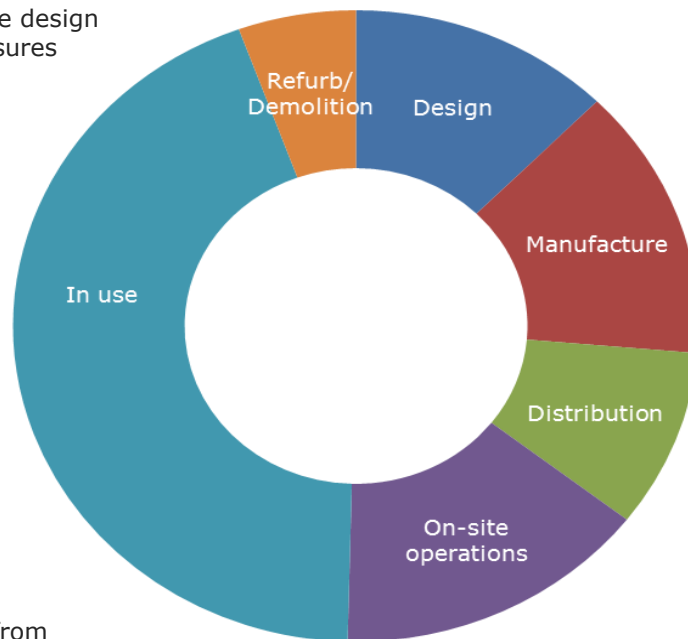
**Manufacture** - A measure is included for domestic production as well as imports.

**Distribution** - CO<sup>2</sup> emitted as materials and people are transported to and from site.

**On-site Operations** – combustion and energy use through on-site operations.

**In-Use Emissions** – CO<sub>2</sub> emitted by users of buildings.

**Refurb/Demolition** - Includes direct and indirect CO<sup>2</sup> emissions (i.e. combustion and energy use) from demolition and waste removal, as well as the process of refurbishment.



**Table 4: Amount of CO<sup>2</sup> emissions the construction industry is able to influence<sup>156</sup>**

Sub-Sector	Mt CO <sup>2</sup>	% of total
Design	1.3	0.5%
Manufacture	45.2	15%
Distribution	2.8	1%
Operations on-site	2.6	1%
In Use	246.4	83%
Refurb/Demolition	1.3	0.4%
<b>Total</b>	<b>298.4</b>	<b>100%</b>

It should be noted that the IGT has identified action points for the wider construction industry:

- to significantly reduce their own carbon emissions;
- to build structures that help their customers lead more energy efficient lives;

<sup>156</sup> 2008 data; percentages do not total 100% due to rounding

- to construct infrastructure which supports clean energy and sustainable practices throughout the economy<sup>157</sup>.

However, providing quantifiable targets is more difficult. Indeed, the IGT highlights measures which would make this task more manageable in the future<sup>158</sup>:

- The UK Government should publish a detailed programme of actions expected to achieve the 2050 target of an 80% reduction in carbon emissions. This programme should include interim milestones to show expected progress in conjunction with planned reductions and which outlines the potential nature and volume of work;
- The UK Government and industry should take joint responsibility for a data needs analysis for the transition to a low carbon built environment. A method, financial commitment and communications programme would also be needed.

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<sup>157</sup> IGT (2010), *Low Carbon Construction – final report*

<sup>158</sup> IGT (2010), *Low Carbon Construction – final report*

## Chapter 5: Statistics - building and energy sectors

### 5.1 BUILDING STOCK

The characteristics of UK building stock have changed dramatically over the last 50 years – typical post-war properties, with coal fires and outdoor sanitation are clearly out of date, but a large proportion of the housing stock that will be inhabited in 2050 already exists. Figures in the following tables have been rounded up or down to nearest whole number.

There are almost 27 million domestic dwellings in the UK<sup>159</sup>. Table 5 shows the dwelling estimates for the UK, illustrating ownership among the private and public sectors.

**Table 5: UK domestic building stock by nation and tenure<sup>160</sup>**

	Private sector		Social sector				Total
	Owner occupied	Private rented	Local authority	Housing executive	Registered social landlord	Housing association	
England	14,860,000	3,706,000	1,801,000	N/A	N/A	2,018,000	22,385,000
Northern Ireland*	469,100	125,400	N/A	85,900	N/A	24,800	705,200
Scotland	1,465,000	242,000	374,000	N/A	N/A	276,000	2,357,000
Wales	945,003	182,269	88,723	N/A	133,640	N/A	1,349,635
<b>TOTAL</b>	<b>17,739,103</b>	<b>4,255,669</b>	<b>2,263,723</b>	<b>85,900</b>	<b>133,640</b>	<b>2,318,800</b>	<b>26,796,835</b>

Older building stock constitutes a wide variation of building fabrics and designs and provides specific challenges in terms of efficient energy usage. The size of this problem is highlighted in Table 6, which shows the number of pre-1919 dwellings and their prevalence in the UK regions – the highest proportion of this older property stock exists in Wales and is represented by nearly 30% of all dwellings.

<sup>159</sup> IGT (2010), *Low Carbon Construction – final report*

<sup>160</sup> Data for England, Scotland and Wales are from 2010; data for Northern Ireland from 2011. Sources: English Housing Survey; Scottish House Condition Survey; Northern Ireland Housing Market Review; and Welsh Government Dwelling Stock Estimates. Please note not all data are available for every category

**Table 6: Proportion of pre-1919 dwellings per nation<sup>161</sup>**

Region	Number of pre-1919 dwellings	Proportion of pre-1919 dwellings of the total number
England	4,865,000	27.7%
Northern Ireland	87,700	12.4%
Scotland	455,000	19.3%
Wales	380,000	28.2%

### Dwelling stock

In 2011, the region with the most domestic buildings was the South East, with 3.7 million homes. The region with the fewest dwellings was the North East, with 1.2 million homes. As of 31 March 2011, there were far more private dwellings (owner occupied and private rental property) than social rented property (18.8 million rather than 4.0 million). Between March 2010 and March 2011, social rented stock increased by 16,000 dwellings and private stock increased by 105,000 dwellings<sup>162</sup>.

## 5.2 RATE OF NEW CONSTRUCTION AND RENOVATION

Over the long term the expansion of building stock is estimated at around 1-2% per year<sup>163</sup>, but recent activity has been affected by market conditions. The total volume of construction output fell by 2.3% in January 2012 compared with January 2011. However, comparing the 3-month period from November 2011 to January 2012 with the previous year, the volume of construction output grew by 0.6%. Of the two main components, new work grew by 0.7% and repair and maintenance rose by 0.4%. The largest increase of 11.1% was new infrastructure work and new public non-housing fell the furthest with a 15.4% reduction<sup>164</sup>.

**Table 7: Construction output in Great Britain (£m): new work - by sector<sup>165</sup>**

Year	New Housing		Other New Work				All New Work
	Public	Private	Infras- tructure	Excluding Infrastructure			
				Public	Private Industrial	Private Commercial	
2009	2,823	10,897	9,537	10,164	3,224	23,833	60,478
2010	4,366	12,820	12,057	13,360	3,598	23,491	69,693
2011	4,436	13,977	13,008	12,467	3,254	24,339	71,481

<sup>161</sup> Data for England and Scotland from 2010; data for Wales from 2009; data for Northern Ireland from 2011

<sup>162</sup> <http://www.communities.gov.uk/publications/corporate/statistics/housingstock2011>

<sup>163</sup> Ravetz (2008), *State of the Stock*

<sup>164</sup> Office for National Statistics (2012), *Output in the Construction Industry*

<sup>165</sup> Office for National Statistics (2012), *Output in the Construction Industry*

**Table 8: Construction output in Great Britain (£m): repair and maintenance - by sector**<sup>166</sup>

Year	Repair and Maintenance						All Repair and Maintenance
	Housing			Infras- tructure	Other Work		
	Public	Private	Total		Public	Private	
2009	6,027	9,920	15,946		7,630	12,529	36,105
2010	6,438	10,601	17,039	6,041	4,479	7,319	34,878
2011	5,918	10,587	16,505	6,838	4,407	7,818	35,568

The ConstructionSkills Network predicts that the sector will mirror the UK economy in its extended recovery period<sup>167</sup>. It sees construction output in 2016 reaching only 95% of its 2007 peak. Similarly, employment in the sector is expected to rise slowly towards 2016, and will fail to reach its 2008 high during that period. An increase in output is expected to be covered by a perceived excess of capacity in the industry, which will necessarily become productive before employee numbers are increased.

As previously stated, the UK Government's figures published in May 2012 show that in 2010 (the latest National Accounts data), construction accounted for just over 8% of UK Gross Value Added (GVA). Table 9 shows the sector's development over the following two years:

**Table 9: Output of the construction industry – GVA growth (seasonally adjusted)**<sup>168</sup>

	Construction	Total GDP
<i>Annual % changes</i>		
2010	8.2%	2.1%
2011	2.8%	0.7% <sup>169</sup>
2011 Q3	-0.1%	0.3%
2011 Q4	1.0%	0.4%
2012 Q1	1.0%	0.0%
<i>Quarter-on-quarter</i>		
2011 Q3	0.5%	0.6%
2011 Q4	-0.2%	-0.3%
2011 Q1	-3.0%	-0.2%

<sup>166</sup> Office for National Statistics (2012), *Output in the Construction Industry*

<sup>167</sup> <http://www.cskills.org/sectorskills/csn/index.aspx>

<sup>168</sup> Commons library standard note (1 May 2012) *Output and Employment by Industry*

<sup>169</sup> At the time of publication industry experts questioned ONS data: <http://train4tradeskills.wordpress.com/2011/04/28/gdp-figures-slam-construction-industry-but-is-it-really-that-bad/>

**Table 10: Regional headlines<sup>170</sup>**

<b>Scotland</b>	<ul style="list-style-type: none"> <li>▪ Between 2010 and 2014, total construction output in Scotland is forecast to increase at an annual average rate of 2.8%, higher than the UK's average of 1.7%. Private housing is predicted to outperform other sectors, with an annual average growth rate of around 10%;</li> <li>▪ Employment in construction will increase to around 257,000 in 2014, 1.2% above 2008's figure.</li> </ul>
<b>Wales</b>	<ul style="list-style-type: none"> <li>▪ Total construction output in Wales is predicted to grow at an annual average rate of 2.5% between 2010 and 2014, stronger than the national average figure of 1.7%;</li> <li>▪ In 2014, employment is projected to reach 127,680, slightly down on 2008 but higher by 8.9% on the 2010 figure of 117,290. The annual recruitment requirement over 2010–2014 for Wales may hit 5,030 which is well above the UK average.</li> </ul>
<b>Northern Ireland</b>	<ul style="list-style-type: none"> <li>▪ Between 2010 and 2014, total construction output in Northern Ireland is expected to increase by an annual average rate of 1.1%, a lower increase than the UK average of 1.7%;</li> <li>▪ Employment may reach around 69,900 in 2014, constituting a rise of 2% on 2010's level but a decrease of 14% on its 2007 peak.</li> </ul>

The CITB-ConstructionSkills Network also notes that in addition to the weak consumer and investor confidence, some traditional trades such as bricklayers will struggle against long-term changes in the nature of construction and a decrease in demand for their skills.

### 5.3 ENERGY EFFICIENT BUILDINGS AND DWELLINGS

#### Domestic buildings

Of the new homes built in England, Wales and Northern Ireland<sup>171</sup> from April 2007 – 31 December 2011 using the Code for Sustainable Homes<sup>172</sup>:

<sup>170</sup> Construction Skills Network (2005), *Blueprint for UK Construction Skills, 2012-2016*

<sup>171</sup> The Code for Sustainable Homes became operational in England in April 2007. From May 2008 in Wales, a minimum of Code Level 3 is required for all new housing promoted or supported by the Welsh Assembly Government or their sponsored bodies and from 2nd June 2008, Code Level 3 is required for all new self-contained social housing in Northern Ireland. The Code does not apply in Scotland

<sup>172</sup> Code for sustainable homes and energy performance of buildings, data to end December 2011



- 98,865 design stage certificates and 52,486 post-construction certificates were issued up to 31 December 2011. The vast majority of dwellings with energy performance certification were built for the public sector;
- 45,555 dwellings were awarded 3-star post-construction ratings;
- 128 dwellings were awarded 6-star ratings;
- 78% of design stage certificates and 87% of post-construction certificates were issued Code level 3;
- In England, the 2010 Quarter 4 average energy efficiency rating of new homes increased from 80.2 in 2009 Quarter 4 to 81.7. In Wales, the increase was from 79.3 to 80.6.

### Existing housing stock

The Code does not apply to existing housing undergoing refurbishment, conversion projects and change of use. Instead, the Code's precursor, 'EcoHomes' (managed by BREEAM) is used. This has no mandatory requirements, but Part L1b of the Building Regulations is binding. EcoHomes is due to be superseded by the BREEAM Domestic Refurbishment scheme to be launched later this year. Until then, EcoHomes 2006 refurbishment registrations will remain valid until an expiry date will be set for final registrations and certification.

Much of the available data relate to energy consumption in domestic homes rather than for non-domestic buildings. DECC's Housing Energy Fact File 2011<sup>173</sup> states that energy use in homes accounts for just under a third of total energy use in Great Britain.

It is clear that more efficient heating and lighting systems in domestic homes have contributed to energy savings; since 1970<sup>174</sup>:

- Use of energy to provide hot water in homes has fallen by approximately 30%;
- The number of homes with some form of double glazing has risen from just under 8% to 90% (by 2008);
- 14.1 million homes have loft insulation of at least 125mm (by January 2012);
- 11.2 million homes have cavity wall insulation (by January 2012);
- 122,000 homes have solid wall insulation (by January 2012).

Despite these achievements, whilst energy use per household has fallen by 16% since 1970, the rise in actual number of households means that overall energy use has increased by 17%. In particular the emergence of new technologies has resulted in an increase in energy use for appliances, which has tripled since 1970.

<sup>173</sup> For Great Britain

<sup>174</sup> DECC (2011), *Housing Energy Fact File*; DECC (2012), *Estimates of Home Insulation Levels*

### Non-domestic buildings

The UK's 1.8 million non-domestic buildings account for a third of CO<sup>2</sup> emissions in the building sector. Three-quarters of these buildings were built before 1985 and therefore pre-date building regulations. Typically larger in roof and floor space, they offer substantial potential for on-site renewables.

For new non-domestic buildings in England, Wales and Northern Ireland Non-Domestic Energy Performance Certificates (NDEPC) and Recommendation Reports must be issued for all non-domestic buildings on completion, and when being sold or rented. This is applicable to all buildings with a floor area of >2500m<sup>2</sup>.

By October 2008, all larger public buildings will require an annual Display Energy Certificate (DEC) which will prominently display their energy performance. An Advisory Report (AR) will also be required every seven years, which will provide further energy efficiency advice.

The figures below are compiled by the Landmark Information Group on behalf of the Governments in England and Wales. The table shows the total number of lodgements made for NDEPCs and DECs in the last 12 months. The figures include cancelled and not for issue reports and multiple reports on a single Unique Property Reference Number.

**Table 11: The number of lodgements for NDEPCs and DECs<sup>175</sup>**

Month and Year	Non-Domestic EPC	Display Energy Certificate
April 2011	5183	1909
May 2011	6439	1988
June 2011	7750	2300
July 2011	7917	2052
August 2011	6711	2215
September 2011	7271	3003
October 2011	6678	4001
November 2011	6894	3905
December 2011	5135	3213
January 2012	5157	3117
February 2012	6552	2705
March 2012	6175	2222

## 5.4 ENERGY CONSUMPTION

In 2010, total overall primary energy consumption in the UK in primary energy terms (fuels obtained directly from natural sources) was 218.5 million tonnes of oil equivalent<sup>176</sup>.

<sup>175</sup> <https://www.ndepregister.com/lodgementStats.html>

Annual data for 2011 in the UK were published on 29 March 2012. There were a number of key points highlighted in the data<sup>177</sup>:

- Total energy production reduced by 13.5% (compared with 2010 figures). Net import dependency of 36.5% is at its highest since 1976;
- Total primary energy consumption for energy uses fell by 7.5% from 2010;
- The generation of low carbon electricity rose from 23% to 28.5% in 2011 – this was due to an increase in renewables and nuclear generation;
- The proportion of renewable generation increased by 2.5% to a high of 9.5% in 2011. Hydro and wind generation benefited from higher rainfall, wind speeds and increased capacity, which resulted in an overall hydro and wind increase of 55% higher than in 2010;
- Coal production dropped by 0.5% and coal imports were up by 23%. Higher generator demand for coal (0.5%) may have contributed to a decrease of 4.5% in coal stocks;
- Final energy consumption was 8% lower than in 2010, with falls recorded in all sectors;
- The mild temperatures of 2011 (1.8 degrees warmer than 2010) led to a drop in domestic energy consumption by 18.5%;
- Gas demand was down by 17% on 2010 figures, which was its lowest level since 1995;
- Electricity consumption was 3.5% lower in 2011 than in 2010.

### Generation of renewable energy

There has been an increase of nearly 10% in the UK's Combined Heat and Power (CHP) capacity during the period 2008 to 2010<sup>178</sup>. Yorkshire and the Humber is the region with the highest level of installed capacity and electricity generation, which comes predominantly via oil refining and chemicals production industries rather than the building sector.

Scotland has approximately 80% CHP capacity. The West Midlands region has the highest proportion of renewable fuel use.

<sup>176</sup> DECC Statistics

<sup>177</sup> [http://www.decc.gov.uk/en/content/cms/news/pn12\\_032/pn12\\_032.aspx](http://www.decc.gov.uk/en/content/cms/news/pn12_032/pn12_032.aspx). At the time of writing, these data are marked as provisional annual figures for 2011

<sup>178</sup> DECC Energy Statistics

As at 2011, renewables accounted for almost 7% of the UK’s electricity supply. Power generated on wind farms has increased by nearly 500%, meaning that onshore wind can provide sufficient electricity for around 1.7 million homes<sup>179</sup>.

### Microgeneration technologies in domestic housing

Table 12 below illustrates the number of microgeneration technologies installed in domestic households, with the energy capacity per year (as at 2008). It should be noted that although the number of biomass and ground source heat pump installations is lower by comparison with solar thermal, the former two are able to provide approximately three times as much annual output as the electric systems.

**Table 12: Microgeneration technologies in households (2008)**<sup>180</sup>

Technology	Number of installations	Energy (MWh/year)
Solar PV	917	2,624
Wind	1,480	2,438
Micro-Hydro	56	2,939
Solar Thermal	80,883	109,243
Biomass	376	8,752
GSHP	2,457	42,052

At the end of April 2012, 314,043 PV installations were in place in the UK, with a capacity in kW of 1,072,529<sup>181</sup>.

## 5.5 THE BUILDING SECTOR – ORGANISATIONS AND WORKFORCE

The building sector is characterised by its composition of a small proportion of large firms and a large proportion of small firms, with 93% of enterprises employing fewer than 10 people. A tiny proportion of firms in the sector employ more than 250 people, but these enterprises account for approximately a third of the sector’s turnover. Additionally, the Office for National Statistics’ Labour Force Survey<sup>182</sup> concludes that 790,000 people working within the sector are self-employed.

<sup>179</sup> DECC (2011), *Housing Energy Fact File*

<sup>180</sup> Cumulative Installations and Annual Energy Statistics, 2008

<sup>181</sup> DECC Energy Statistics

<sup>182</sup> Four quarter average to June 2010

**Table 13: Employment within CITB-ConstructionSkills' footprint, UK 2009<sup>183</sup>**

Size of enterprise by no. of employees	Enterprise		Employees	
	Number	% of sector	Number	% of sector
0-9	339,770	93.0	457,363	33
10-49	22,510	6.2	317,553	22.9
50-249	2830	0.8	199,419	14.4
250+	425	0.1	409,676	29.6
<b>Total</b>	<b>365,535</b>	<b>100.0</b>	<b>1,384,011</b>	<b>100.0</b>

**Table 14: Employment within SummitSkills' footprint, UK 2008<sup>184</sup>**

Size of enterprise by no. of employees	Number of enterprises
0-9	2,082,185
10-19	131,820
20+	111,765
<b>Total</b>	<b>2,325,770</b>

Data from the Office for National Statistics (ONS) provides a more detailed breakdown of construction enterprises by size and region for 2010, as outlined in Table 15 below:

**Table 15: Construction industry structure, 3<sup>rd</sup> quarter of 2010 (Great Britain)**

Size of enterprise (by no. of employees)	England	Wales	Scotland	Great Britain Total
1	120,843	5,687	8,940	135,470
2-3	58,673	2,787	3,972	65,432
4-7	28,217	1,499	2,403	32,119
8-13	10,165	529	1,080	11,774
14-24	5,093	299	637	6,029
25-34	1,591	93	180	1,864
35-59	1,584	91	221	1,896
60-79	488	27	78	593
80-114	402	22	48	472
115+	654	30	108	792
<b>All firms</b>	<b>227,710</b>	<b>11,064</b>	<b>17,667</b>	<b>256,441</b>

<sup>183</sup> CITB-ConstructionSkills' Sector Skills Assessment, 2010

<sup>184</sup> SummitSkills' Sector Skills Assessment, 2010

Table 16 below shows the latest data available<sup>185</sup> for the number of blue collar workers in the built environment sector.

**Table 16: Blue collar workforce in the built environment sector (August 2011)**

Occupation	Number of employees
Electricians and electrical fitters	277,000
Bricklayers and masons	12,000
Roofers, roof tilers and slaters	43,000
Plumbers and heating and ventilation engineers	190,000
Carpenters and joiners	217,000
Glaziers, window fabricators and fitters	45,000
Plasterers	58,000
Floorers and wall tilers	41,000
Painters and decorators	118,000
Scaffolders, staggers and riggers	31,000
Construction operatives	85,000
Steel erectors	12,000
Construction and building trades not elsewhere classified	226,000
<b>TOTAL</b>	<b>1,355,000</b>

In the UK the building services engineering sector<sup>186</sup> contains:

- 61,000 enterprises
- 613,000 employees<sup>187</sup>

<sup>185</sup> Office for National Statistics, August 2011

<sup>186</sup> Representing the electrotechnical, heating, ventilating, air conditioning, refrigeration and plumbing industries as well as environmental technologies/microgeneration

<sup>187</sup> Data taken from SummitSkills website: <http://www.summitskills.org.uk/>

## 5.6 SKILLS HELD IN THE BUILDING SECTOR

The CITB-ConstructionSkills’ Skills Provision Committee was established in order to Provide a credible insight into skills in the building sector, with a particular focus on Higher Education and Further Education levels. The Committee undertook a research project which found that National Vocational Qualifications (NVQs), Scottish Vocational Qualifications (SVQs) and Vocationally-Related Qualifications (VRQs) such as Certificates or Diplomas, and under- and post- graduate qualifications were all being achieved by employees within the sector, with the majority of training at Level 2<sup>188</sup>.

A report published in June 2011 found that of 1,050 employers surveyed in the construction sector, 47% mainly offered NVQ/SVQs at Level 2; 23% mainly at Level 3 and 15% mainly at Level 4<sup>189</sup>.

Table 17 below shows qualification levels held by manual trades in the construction sector:

**Table 17: Manual trades in the construction sector by qualification level (2010 data)<sup>190</sup>**

Level	% of workforce
S/NVQ Level 4 and above	7%
S/NVQ Level 3	20%
S/NVQ Level 2	15%
Below S/NVQ Level 2	14%
Trade Apprenticeship	19%
Other qualifications held	13%
No qualifications held	13%

## 5.7 FURTHER DATA NEEDS

A number of areas would benefit from the collection and analysis of data to provide a clearer view of the status quo. The following recommendations were made by the IGT in their final report in 2010:

<sup>188</sup> Skills Provision Committee (2011), *A Picture of UK Training Provision for the UK Construction Industry*

<sup>189</sup> CITB-ConstructionSkills (2011), *Training and Skills in the Construction Sector*

<sup>190</sup> Labour Force Survey 2010

- The UK Government should commission a programme of independently conducted, properly funded, published studies of the energy performance of buildings in the public estate built since the introduction of the 2006 revision of the building regulations by comparison with their design criteria<sup>191</sup>;
- The UK Government should commission a review of the benchmarks used to calculate DEC ratings in order to ensure that they are consistent and robust, and that they effectively differentiate on energy performance for buildings of different types; and that the process should be simplified to the greatest practical degree<sup>192</sup>.

It is striking that data concerning energy consumption, efficiencies and emissions of non-domestic building stock is hard to come by – especially as the non-domestic stock offers such substantial potential for energy efficiency. In particular, it would be useful if analysis and aggregation of rating data of completed and retrofitted non-domestic buildings was available. Further detail on geographical spread and property type would also be of merit.

Data are not currently available for energy consumption and generation for the building sector specifically, so further breakdowns by industry sector to include construction would be valuable – notably numbers of low energy buildings (which in turn requires a clear definition of what a 'low energy' building means to the sector, and whether this would differ in domestic and non-domestic settings).

The Office for National Statistics and the UK Commission for Employment and Skills carry out surveys into labour market and skills information; these findings would be of greater value for investigation into energy efficiency if raw data mapping skills and qualifications levels by occupation as well as industry could be made readily available.

DECC's Housing Energy Fact File identifies a need for additional data in the following areas:

- Actual take up of renewable energy systems by households;
- How much energy is generated by renewable energy systems split by thermal and electrical energy;
- Aspects of energy use not currently covered by the Building Regulations (e.g. use of appliances);
- Impact of smart meters on energy use in homes.

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<sup>191</sup> IGT (2010), *Low Carbon Construction – final report*. Recommendation 3.13

<sup>192</sup> IGT (2010), *Low Carbon Construction – final report*. Recommendation 6.12



## Chapter 6: Existing Vocational and Educational Training (VET) Provisions

### 6.1 NATIONAL SYSTEM FOR VET OF CRAFTSMEN AND OTHER ON-SITE WORKERS IN BUILDINGS

#### Responsible Authorities

In the UK Further Education (FE) is the name given to the period of non-compulsory schooling that takes place between the end of compulsory education at the age of sixteen, and the beginning of Higher Education (HE). FE can take the form of either regular attendance at a school or college, or undertaking vocational qualifications, usually through a college or education training provider<sup>193</sup>.

The main difference between academic and vocational courses is that vocational courses focus upon work-based training backed up by academic study, rather than academic study alone, and are typically graded on a mixture of coursework and examination<sup>194</sup>. UK apprenticeships are work-based training courses enabling apprentices to study for a relevant qualification while they are employed. Three levels of apprenticeship - Level 2 (Intermediate), Level 3 (Advanced), and Level 4 (Higher) – are offered, spanning a range of individual Apprenticeship Frameworks<sup>195</sup>. The latter are used by organisations that deliver apprenticeships to ensure that training is consistent and meets national standards.

Responsibility for skills policy in the UK is devolved across the nations. In Scotland a non-departmental public body, Skills Development Scotland (SDS), has a remit to bring about positive change in relation to Scottish skills, and supports delivery of the Scottish Government’s Skills Strategies. SDS funds the delivery of training among independent providers and its careers service, while the Scottish Funding Council funds delivery of training among Scotland’s colleges. The Education and Skills Department within the Welsh Government has responsibility for the skills agenda in Wales, including the provision of qualifications in the Welsh language. Similarly in Northern Ireland the Department for Employment and Learning within the Northern Ireland Executive’s role is to promote learning and skills, and ensure individuals are work-ready.

The UK Government ministerial Department for Business Innovation and Skills (BIS) has

<sup>193</sup> <http://www.educationuk.org/UK/Article/UK-education-teaching-and-study-methods>

<sup>194</sup> [http://www.direct.gov.uk/en/educationandlearning/qualificationsexplained/dg\\_181951](http://www.direct.gov.uk/en/educationandlearning/qualificationsexplained/dg_181951)

<sup>195</sup> The National Apprenticeship Service (NAS) supports, funds and co-ordinates the delivery of Apprenticeship programmes throughout England. Each Apprenticeship programme has its own framework which includes the names and credit values of all qualifications within the programme as well as the length of time they are expected to take to accomplish and the career paths available to those who complete the Apprenticeship. The Specification of Apprenticeship Standards for England (SASE), published by BIS, sets out the minimum requirements to be included within an Apprenticeship Framework in England

ownership for 15 policy areas ranging from skills and FE/HE to enterprise and business support. Its remit within the further education and skills systems is to strengthen them as part of a sustainable and responsible economic model to deliver business growth across the nation<sup>196</sup>.

Accountable to the Secretary of State for BIS as well as the Department of Work and Pensions (DWP), Ministers in Her Majesty's Treasury, the Department for Education and the Devolved Administrations, the UK Commission for Employment and Skills (UKCES) is a non-departmental public Body. An employer-led social partnership, UKCES's composition spans large and small employers across a wide range of industry sectors along with Sector Skills Councils (SSCs), Trade Unions and representatives from the UK's devolved administrations.

With an overall aim to support a move to a more sustainable and competitive economy, UKCES has a number of key priorities<sup>197</sup>:

- To make and win the economic argument for greater investment in skills;
- To enhance the value and accessibility of vocational training, especially apprenticeships;
- To galvanise industries and sectors to improve the skills and productivity of their workforces;
- To work with sectors to ensure the creation of more and better jobs, maximising opportunities for unemployed people.

UKCES licenses a network of Sector Skills Councils (SSCs), which represents the skills needs and training interests of around 90% of the UK workforce.

To drive investment in skills and develop sector specific skills, SSCs hold responsibilities for the development of National Occupational Standards (NOS)<sup>198</sup>, regulation of qualifications and identification of skills gaps through the collation and analysis of labour market intelligence (LMI) and production of Sector Skills Assessments.

SSCs and Standard Setting Organisations (SSOs) also work closely with Awarding Organisations in their sector footprint, to develop new and update existing qualifications, as dictated by industry demands. Awarding Organisations award accredited qualifications and have a remit to ensure that standards are maintained across qualification specifications. Changes to the core funding model of SSCs which took full effect from April 2012 (from equal funding to a fully contestable model) aim to raise skills and drive enterprise, jobs and

<sup>196</sup> <http://www.number10.gov.uk/policy/business-innovation-and-skills-bis/>

<sup>197</sup> [www.ukces.org.uk](http://www.ukces.org.uk)

<sup>198</sup> NOS are statements of competence describing the skills, knowledge and understanding required of a particular job role. They are standards of performance that are, in essence, benchmarks of best practice. NOS are used, for example, in the development of Apprenticeship Frameworks. When performing within an occupation, a function or a sector, NOS set out what standards of performance are to be achieved in order to be recognised as competent. NOS suites are made up of a number of units and these are available to view on the UK NOS Database

growth wherever the demand is highest<sup>199</sup>.

The following table details the relevant SSCs for this project, the sectors they are responsible for and some of the work they are carrying out with relation to National Occupational Standards and qualification development – the latter is not intended to be an exhaustive list.

**Table 18: SSC Sector Footprints and Skills Development**

SSC	Sector(s)	NOS development (most relevant to energy and the built environment)	Qualification development examples
Asset Skills	Property, Housing, cleaning services, parking and facilities management	Energy Advisors Conservation Control Technical Design	Energy Advisors
Cogent	Chemicals pharmaceuticals, nuclear, oil & gas, petroleum & polymers	Sustainable business practice (incl. Resource efficiency and environmental management)	Energy efficiency and waste minimisation
CITB-ConstructionSkills	Construction	Roofing Occupations Insulation and Building Treatments Thermal Insulation Senior Crafts Innovative/Modern Methods of Construction Heritage Skills	Insulation and Building Treatments Providing Energy Efficiency Services Heritage Skills
Energy and Utility Skills	Electricity, gas, waste management and water industries	Metering Wind Turbines	
Proskills UK	Process and manufacturing industry	Health and Safety	Sustainable Concrete Glazing
SummitSkills	Building services engineering	Environmental Technology Heat Pump Installers	Certificate in Environmental Technology Systems Competency Framework for Heat Pump Installer

<sup>199</sup> [www.ukces.org.uk](http://www.ukces.org.uk)

## 6.2 DEVELOPMENT AND ACCREDITATION OF VOCATIONAL QUALIFICATIONS

The main Awarding Organisations<sup>200</sup> within the UK Vocational Education Training (VET) system for the built environment sectors have a major role in the delivery of education and training for the industry. The Joint Council for Qualifications (JCQ) represents the seven largest Awarding Organisations in the UK which offer academic, vocational and vocationally related qualifications. JCQ's role includes assisting Awarding Organisations to create common standards and to work towards them as well providing a forum for discussion among Awarding Organisations<sup>201</sup>.

Reporting to the UK Parliament, the Office of Qualifications and Examinations Regulations (Ofqual), regulates general and vocational qualifications in England and vocational qualifications in Northern Ireland. Ofqual is responsible for accrediting and monitoring the activities of those that deliver and assess qualifications. As a result of the Education Act of 2011 Ofqual was granted additional powers on May 4<sup>th</sup> 2012. These include the power to<sup>202</sup>:

- direct an Awarding Organisation;
- impose a fine upon an Awarding Organisation;
- withdraw recognition of an Awarding Organisation, either partially or in full;
- impose additional conditions of recognition upon Awarding Organisations;
- subject some or all of an Awarding Organisation's qualifications to an accreditation requirement.

Regulators in Wales and Northern Ireland (in addition to Ofqual) are the Department for Children, Education, Lifelong Learning and Skills (DCELLS), an executive body of the Welsh Government, and the Council for the Curriculum Examinations and Assessment (CCEA) of Northern Ireland. Once recognised by the regulator, Awarding Organisations design national vocational qualifications (NVQs) to be submitted to the regulator for approval. Accredited qualifications are subsequently listed on the Register of Regulated Qualifications<sup>203</sup> and the Database of Approved Qualifications in Wales (DAQW)<sup>204</sup>. The Skills Funding Agency determines what funding arrangements should apply to qualifications and the Awarding Organisation is then responsible for making its centres aware and delivering the necessary support to allow qualifications to be delivered<sup>205</sup>.

<sup>200</sup> The Federation of Awarding Bodies (FAB) is a trade association which represents organisations that award vocational qualifications in the UK. FAB has in excess of 100 members providing qualifications used by the full range of education and training providers to award vocational qualifications, including Apprenticeships

<sup>201</sup> <http://www.jcq.org.uk/>

<sup>202</sup> <http://www.ofqual.gov.uk/news-and-announcements/130-news-and-announcements-press-releases/892-ofquals-new-regulatory-powers-come-into-effect>

<sup>203</sup> <http://register.ofqual.gov.uk/Qualification>

<sup>204</sup> <http://www.daqw.org.uk/>

<sup>205</sup> <http://www.ofqual.gov.uk/qualifications-assessments/vocational-qualifications>

In order to develop a vocational qualification an Awarding Organisation must be recognised to offer such qualifications on the Qualifications and Credit Framework (QCF). The QCF awards credits for both units of qualifications and for whole qualifications. Each unit has a credit value and units can be combined to make whole qualifications as part of a process of credit accumulation and transfer.

In Wales there is a separate Credit and Qualifications Framework (CQFW). The CQFW recognises both full and partial completion of qualifications by learners as well as training activities that fall outside of regulatory and funding arrangements<sup>206</sup>.

In Scotland there is a framework of Levels and Credits in use. Scottish vocational qualifications (SVQs) are accredited by the Scottish Qualifications Authority (SQA) Accreditation Unit. The Scottish Credit and Qualifications Framework (SCQF) gives credit points to mainstream qualifications as well as attributing a level which shows how different qualifications relate to one another. The SCQF is not a regulatory framework or an Awarding Organisation. The SCQF Partnership is a charity registered in Scotland which has the aim of promoting and developing the SCQF and of developing and maintaining relationships with other qualification frameworks both in the UK and overseas<sup>207</sup>. Membership of the SCQF Partnership includes:

- the Quality Assurance Agency for Higher Education;
- Scotland's colleges;
- Ministers of the Scottish Government;
- the Scottish Qualifications Authority; and
- Universities Scotland.

### European Qualifications Framework

The European Qualifications Framework (EQF) exists to help employers and individuals to better understand how qualifications gained within different countries compare thus enabling increased mobility of workers across Europe. The EQF applies to all qualification types and uses reference levels from Level 1 (basic) to Level 8 (advanced). Once the EQF is fully implemented, all qualification certificates will bear a reference to an EQF reference level which will allow easier comparison between qualifications of different nations<sup>208</sup>.

The European Credit System for Vocational Education and Training (ECVET) focuses upon increasing transferability between different countries and learning environments across Europe, of individuals with vocational training experience<sup>209</sup>. ECVET is a technical framework made up of units worth a certain number of points, for example 60 ECVET points are

<sup>206</sup> <http://wales.gov.uk/topics/educationandskills/qualificationsinwales/creditqualificationsframework/?lang=en>

<sup>207</sup> <http://www.scqf.org.uk/About%20Us/>

<sup>208</sup> [http://ec.europa.eu/education/lifelong-learning-policy/eqf\\_en.htm](http://ec.europa.eu/education/lifelong-learning-policy/eqf_en.htm)

<sup>209</sup> [http://www.cedefop.europa.eu/en/Files/4074\\_EN.PDF](http://www.cedefop.europa.eu/en/Files/4074_EN.PDF)

allocated to one year of full time vocational education<sup>210</sup>.

Highly labour intensive, construction is the largest industry sector in the European Union (EU) and contributes almost 10% to GDP<sup>211</sup>. The cross border transfer of labour is an important economic factor to many nations and disparity between qualifications gained in different nations can mean that cross border comparisons, which impact heavily upon human capital, can be difficult to make. Applying EQF and ECVET to the built environment industry could help to overcome this problem by increasing transparency between qualifications and training undertaken and awarded in different countries.

### Funding

A partner organisation of BIS, the Skills Funding Agency (the Agency) funds adult further education, including skills training, in England. Working within a budget set by BIS, the Agency allocates funds to colleges and private training providers to deliver qualifications and training. In addition, the Agency hosts the National Apprenticeship Service, aiming to increase the number of apprentices<sup>212</sup>.

The Education Funding Agency (EFA) is a new Executive Agency which began operation on 1<sup>st</sup> April 2012. The EFA sits within the Department for Education. Its role is to allocate funding across the education and training sectors for 3 to 19 year olds, including funding the provision of 16 - 19 education comprising, among others, City Technology Colleges and University Technical Colleges as well as administering funding for schools and 6<sup>th</sup> form colleges<sup>213</sup>.

## 6.3 SUPPLY OF VOCATIONAL EDUCATION AND TRAINING IN THE UK

A requirement of this research was to map the range of vocational education and training (VET) available for the blue collar workforce in scope of this work. This aspect of the research was severely restricted by the lack of nationally available, comprehensive and published data on numbers of UK training courses (both accredited and non-accredited<sup>214</sup>), as well as the names and numbers of training providers delivering each type of course<sup>215</sup>.

Table 19 below shows the number of built environment accredited courses relevant to energy efficiency offered by each Awarding Organisation. Multiple training providers are able to offer these courses.

<sup>210</sup> [http://ec.europa.eu/education/lifelong-learning-policy/ecvet\\_en.htm](http://ec.europa.eu/education/lifelong-learning-policy/ecvet_en.htm)

<sup>211</sup> [http://www.ueapme.com/docs/pos\\_papers/2005/051215\\_%20EQF\\_Construction.pdf](http://www.ueapme.com/docs/pos_papers/2005/051215_%20EQF_Construction.pdf)

<sup>212</sup> <http://skillsfundingagency.bis.gov.uk/>

<sup>213</sup> <http://www.education.gov.uk/aboutdfe/armslengthbodies/b00199952/the-education-funding-agency/efa-framework-document-2012>

<sup>214</sup> 'Accredited' courses are defined as those leading to a recognised qualification or 'level' of achievement on the QCF/CQFW/SCQF

<sup>215</sup> The approach to the VET mapping is described in more detail in Chapter 11

**Table 19<sup>216</sup>: Awarding organisations offering qualifications relating to the built environment (England, Northern Ireland and Wales – as at last quarter of 2011)**

<b>Awarding Organisation</b>	<b>Number of relevant accredited qualifications</b>
Awarding Body for the Built Environment	49
ABC Awards	32
Association of Industrial Truck Trainers	3
AQA - City & Guilds	7
Ascentis	1
CABWI Awarding Body	2
China Clay and Ball Clay Industries Training Board	3
Council for the Curriculum, Examinations and Assessment	1
City & Guilds	226
Chartered Institute of Building	6
CITB	29
Construction Project Management Group	1
CSkills Awards	654
EMTA Awards Limited	64
Pearson Education Ltd	211
EDI	2
GQA Qualifications Limited	41
JIBECI	1
Lantra Awards	29
Mineral Products Qualifications Council	18
National Federation of Property Professionals	3
National Fencing Training Authority	2
OCR	7
Open Awards	5
Open University Awarding Body	11
ProQual Awarding Body	1
Royal Society for Public Health	12
RTITB Services Limited	1
Scottish Qualifications Authority trading as SQA <sup>217</sup>	91
WAMITAB	1
WJEC-EDEXCEL-CBAC	3

<sup>216</sup> <http://www.ofqual.gov.uk/standards/statistics/vocational-data/>

<sup>217</sup> SQA also offers 180 accredited qualifications for the built environment in Scotland

Based on the desk research undertaken to map VET provision in the UK, there are 419 training providers offering relevant energy efficiency courses. Of the total number of course identified, 2,046 are accredited and 758 are non-accredited. The following tables show the number of completed courses for the past three years.

**Table 20: Number of certificates issued in the last three years for qualifications relating to the built environment<sup>218</sup>**

Year	Number of certificates	% change on previous year
2011	205,069	-5.4%
2010	216,662	-11.4%
2009	244,653	n/a

**Table 21: Number of certificates issued in the last three years for qualifications relating to the built environment in Scotland (SQA data)**

Year	Entries	Awards	% change on previous year (Entries)	% change on previous year (Awards)
2011	7495	5828	20.6%	4.0%
2010	9443	5642	-13.7%	25.8%
2009	10946	4483	n/a	n/a

National Skills Academy for Environmental Technologies (NSAET) qualifications and training are the result of many years of research and work with companies in the building services engineering sector by SummitSkills, the Sector Skills Council. Surveys with over 2000 employers were carried out in both 2008 and 2009<sup>219</sup> and since then the qualifications and training framework have developed considerably. Summit Skills and EUSkills have worked in partnership to develop functional maps for Renewable Energy and Environmental Technologies to support the development of National Occupational Standards (NOS)<sup>220</sup>. There are options in installation or installation and maintenance in the following areas<sup>221</sup>:

- Solar Thermal Hot Water Systems;
- Small Scale Photovoltaic Systems;
- Heat Pump Systems;
- Water Harvesting and Recycling Systems;
- Level 3 Award in Understanding the Fundamental Principles and Requirements of

<sup>218</sup> <http://www.ofqual.gov.uk/standards/statistics/vocational-data/>

<sup>219</sup> Available from <http://www.nsaet.org.uk/research/lmi.shtml>

<sup>220</sup> <http://www.summitskills.org.uk/renewables/438>

<sup>221</sup> NSAET (2011), *Low Carbon Business Opportunities*



Environmental Technology Systems (ideal for management and technical staff who might be selling or describing new technologies to customers).

Additional qualifications in technologies such as Biomass and Combined Heat and Power (CHP) are being developed and it is also anticipated that qualifications at graduate and post graduate level will be available.

Recent research into energy efficiency and microgeneration in Scotland identified the developments already underway to meet the skills requirements. NOS suites are available for energy assessment and advice, microgeneration technology and insulation skills and the SSCs (Asset Skills, CITB-ConstructionSkills and SummitSkills) are working to ensure any new qualifications are derived from these<sup>222</sup>. Other developments also include work the SSCs are carrying out in conjunction with the Scottish Qualifications Authority (SQA) to develop the Certificate in Environmental Technology Systems<sup>223</sup> and work between ConstructionSkills and the National Insulation Association (NIA) to further develop existing qualifications for internal and external insulation systems<sup>224</sup>.

A number of changes are also being made to units within Scottish Higher National qualifications including the addition of Energy Efficient Design and Operation, Wall and Floor Tiling, Environmental Control Systems, Renewable Energy Systems and Microgeneration schemes<sup>225</sup>. The report concludes that only one course exists in Scotland that meets the required industry competence standard, the SQA Certificate in Environmental Technology Systems (Microgeneration) but other qualifications delivered across the rest of the UK were available.

### Training provision not part of the national VET system

In addition to the network of SSCs, other independent organisations and charities are becoming more involved in the implementation of skills and training. The UK Green Building Council (UKGBC)<sup>226</sup> for example is a membership based national charity that has a training programme open to members and non-members. Its "Sustainability Training and Education Programme" (STEP) for example has the following aims:

- Encourage leadership on green issues;
- Enhance knowledge about sustainability across the board;
- Facilitate multi-disciplinary collaboration;
- Help organisations future-proof their business; and
- Foster a perspective based around systems-thinking.

<sup>222</sup> Scottish Government (2011), *Energy Efficiency and Microgeneration in the Built Environment*

<sup>223</sup> Ibid. This qualification covers solar thermal, solar photovoltaic and heat pump systems and could be extended to include biomass and additional microgeneration technology

<sup>224</sup> Ibid

<sup>225</sup> Ibid

<sup>226</sup> <http://www.ukgbc.org/content/green-skills>

There are also specific centres in the devolved nations that are responsible for supporting employers to develop their skills. In Wales for example the Developing Low Carbon Skills Project allows employers to access subsidised training, and the Eco Home Building Centre, British Gas Academy and Sustainable Construction Centre will all support skills development in Wales<sup>227</sup>.

#### **6.4 EXTENT TO WHICH THE CURRENT SYSTEM ALREADY ADDRESSES SKILLS FOR IMPLEMENTATION OF ENERGY EFFICIENCY AND RENEWABLE ENERGY MEASURES IN BUILDINGS**

From their survey of training providers in 2010, SummitSkills<sup>228</sup> concluded that the supply of training provision for Environmental Technologies must be increased to meet their projections in the run up to 2020. Availability of training for areas where there is larger demand such as solar water and photovoltaic panel technologies is higher than for micro-hydro for example. The majority of courses were also found to be for those who are already qualified craft operatives.

The general consensus among respondents is that shorter, non-accredited courses may have gaps in relation to relevant skills and knowledge, and industry stakeholders are concerned that short courses that are not fit for purpose (but may be a cheaper option) could prevail among employers.

New skills are required to be primarily concerned with new equipment needed for installing renewable energy systems on site. This includes heat pumps, heat and water recycling and micro-generation systems for example<sup>229</sup>. An important step in the development of skills and standards for energy efficiency will be the introduction of Government-led initiatives and developments such as the Green Deal<sup>230</sup>. The accredited installation standards for the Green Deal will undoubtedly contribute towards the necessary up-skilling of the workforce; however it does rely on employers being aware of, understanding and being eligible for the training. Much improvement is required in relation to the current dissemination of information and degree of progressive learning, particularly amongst small sub-contractors and builders<sup>231</sup>.

As previously stated, the majority of industry stakeholders believe that skills development for the blue collar workforce will require “evolution, not revolution”<sup>232</sup>. In Scotland in particular focus group participants were confident that on-site workers are already well skilled, and would be able to acquire relevant knowledge in relation to new technologies and

<sup>227</sup> <http://cutcarboninfo/what-can-i-do/green-deal-training-and-qualifications>

<sup>228</sup> Summit Skills (2010), *Potential Training Demand in Environmental Technologies in Building Services Engineering*

<sup>229</sup> ConstructionSkills (2010), *Sector Skills Assessment Construction – Scotland report*

<sup>230</sup> The Centre for Low Carbon Futures (2011), *The Retrofit Challenge – Delivering Low Carbon Buildings*

<sup>231</sup> Ibid; backed up by primary research among industry stakeholders

<sup>232</sup> Comment from focus group participant

processes relatively quickly and easily. Stakeholders in other nations agreed that the blue collar workforce is accustomed to responding to mandatory requirements that prompt a need to up-skill.

However one of the major concerns among respondents is in relation to current limited demand for energy efficiency training courses. Whilst providers maintain that if demand was there they would be able to respond quickly, many sector stakeholders believe that provision would 'lag behind' industry needs – given that it can take some time to develop and implement NOS and qualifications. For example focus group participants in Scotland consider that there is a strong college network, particularly well developed in construction. A number of colleges have come together to form the Energy Skills Partnership as a means to offer a range of energy efficiency training courses nation-wide. However Scottish stakeholders remain concerned that employers lack clarity in relation to what training is required to support the 2020 initiatives<sup>233</sup>, and therefore colleges are not experiencing high levels of uptake for their courses. A number of UK-wide providers interviewed for this research had in fact designed energy efficiency courses which – although advertised – had never in fact been delivered due to lack of employer demand.

In addition employers consider that the quality of provision and knowledge/expertise of tutors can be inconsistent UK-wide. There appears to be a clear need for 'train the trainer' provision.

*"The blue collar workforce is both competent and capable to help the UK to meet various policy and energy targets. The area where additional capacity may be required is within up skilling and providing good quality CPD to trainers and tutors in colleges and training providers"*

**Skills Development Scotland**

*"There is no consistency from one college to the next"*

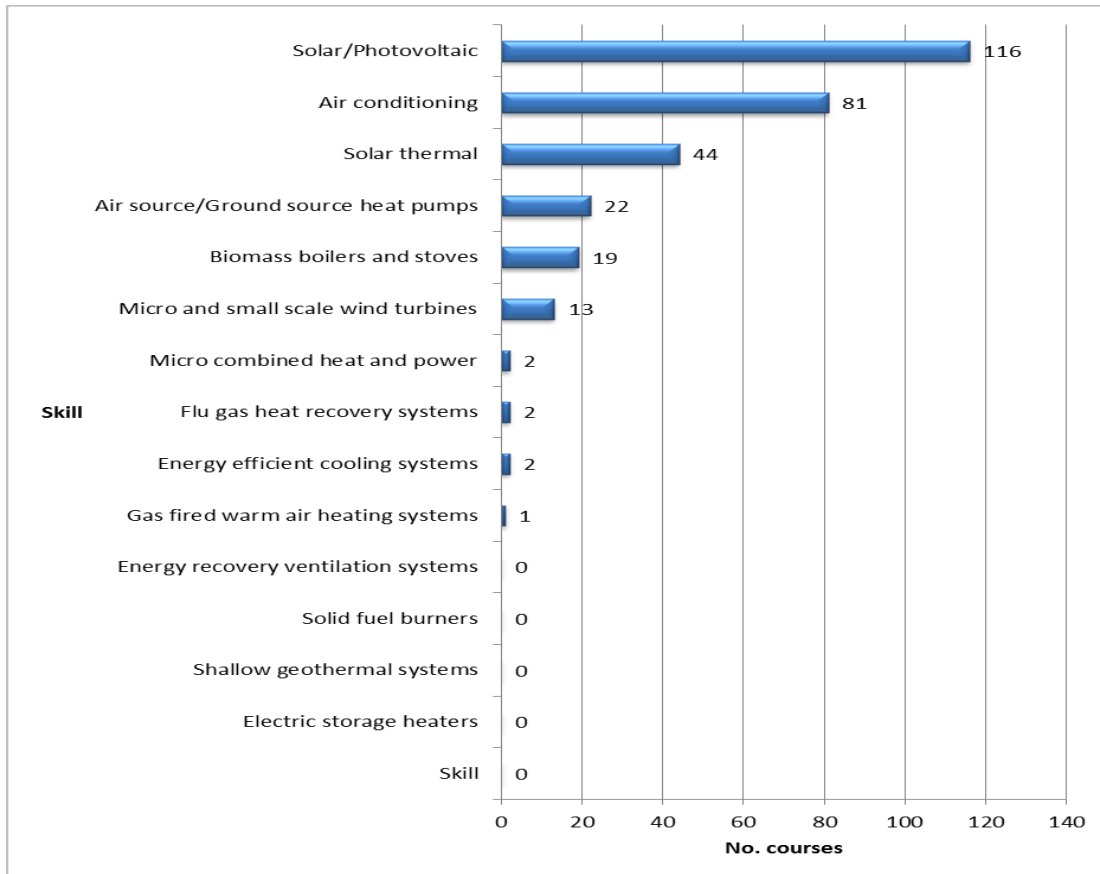
*"The market will wait for the demand signal before reacting... colleges are primed for change but they are not in a position to respond fully until there is a demand to cater for"*

**Stakeholder feedback**

Current VET provision has been mapped against the high priority skills needs (discussed in more detail in Chapter 7) required to achieve the 2020 energy targets. Figure 8 below suggests that solar PV and solar thermal are relatively well catered for, but that there is limited provision in relation to a number of other high priority skills requirements.

<sup>233</sup> Notably the types of equipment that will be needed e.g. which kinds of energy efficient systems and materials

**Figure 8: Current VET provision mapped against high priority skills needs**



It should be taken into consideration that identification of relevant courses, as previously stated, is a difficult task as sources allow only for keyword searching in course titles. Therefore if aspects relating to specific energy efficiency skills or knowledge are embedded within other training courses – this is not at all clear. As employers seeking training would typically seek to identify this using a keyword search – for example ‘biomass’ – the resulting information suggests that there are very limited options available to them.

Furthermore, currently there are no comprehensive lists of energy efficiency training provision listed by provider/region available on SSC websites. National Skills Academy and other SSC-affiliated provision are listed, but there are no links to other nationwide providers. Employers and stakeholders have strongly argued that the lack of relevant information about a) what type of training is required and b) where and how this can be accessed is a significant obstacle for the sector.

Of the employers interviewed for this research, just over 36% consider there are gaps in current training provision. Existing provision was rated at an average of 6.03 out of 10 in

relation to its suitability to support delivery of the 2020 energy targets. Providers rated their existing provision at an average of 5.5 out of 10 in relation to its suitability.

Other issues relate to 'inflexibility' of the offer. For example course times, dates and the requirement to attend tutorials and lectures on-site rather than via more flexible means such as online seminars or provision that is offered at different times of the year, not wedded to traditional college term dates.

Furthermore providers believe that Awarding Organisations that are unwilling to collaborate with them can block the development of relevant provision – particularly in the more rural areas of Wales and Northern Ireland. Stakeholders noted that training is not widely available in Wales to up-skill the workforce for the needs of the Energy Island in Anglesey. There is a concern that employers in Wales, especially SMEs, would not be able to benefit from up-skilling and that instead businesses would send their teams over from England (for example Bristol and Birmingham) to capitalise on the opportunities.

Employers note that there is a lack of "joined up training" – with current provision tending to incorporate aspects that are relevant to energy efficiency incorporated but it can be difficult to locate a "one-stop-shop", meaning that training is too fragmented. Limited practical skills taught on real or simulated sites can also be an obstacle.

#### Ways in which training provision needs to adapt

Respondents have suggested a number of ways for training provision to adapt in the future, which will be vital to ensuring it is as suitable as possible to support achievement of the 2020 targets:

- Colleges and private training providers need to collaborate more closely with industry in order to develop fit for purpose training – in particular for HE and FE to canvass feedback from one cohort and use this to review market trends before enrolling the next;
- The process of developing qualifications needs to be faster;
- Transitional training models<sup>234</sup> are necessary to enable multi-skilling – across all occupations and sub-sectors but in the first instance within insulation where technological changes are likely to occur quickly;
- The design of a 'multi-skilled energy Apprenticeship Framework';
- A more flexible offer – such as a mix of online learning as well as face-to-face tutorials;
- More Continuing Professional Development (CPD) needs to be made available to tutors so that they maintain up-to-date awareness of new technologies as they develop;
- Provision of 'bolt-on' units to supplement existing qualifications, which can be fast to

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<sup>234</sup> This would allow learners to 'major' in one area such as brick-laying, but complete subsidiary modules in other areas

obtain and not cost-prohibitive for the sector.

### Capacity to deliver training and numbers of required trainers/courses

Recently there have been a small number of pilot training schemes in relation to Green Deal – however the development of relevant qualifications is still a work in progress, even though the scheme will be launched within the next six months. Training providers feel that they are unable to plan ahead to ensure there will be sufficient capacity in their workforce to deliver training courses that may be required. Primary research for this project indicates that at least 700 new trainers will be needed to deliver Green Deal provision alone – should there be sufficient consumer demand for the scheme. Over half of the employers interviewed for this research consider there is a need, to some extent, to recruit more specialist trainers. Stakeholders estimate a need for at least 500 trainers to ensure that provision can be offered across all four nations.

Looking ahead to 2020, industry stakeholders express concerns about an ageing workforce – not just in the sector, but within training providers as well. Expert tutors are retiring but are not being replaced – partly due to a lack of demand for this kind of training as employers are reluctant to invest in training at present. This situation is expected to change as the economic outlook improves – the risk is that there will be insufficient numbers of qualified trainers and relevant courses ready to meet demand.

## 6.5 EXISTING INSTRUMENTS TO MONITOR MARKET DEVELOPMENTS IN TERMS OF TECHNOLOGY, SKILLS REQUIREMENTS AND TRAINING

SSCs regularly carry out surveys of employers and vocational and education training providers to investigate the current provision and produce demand and supply gap analysis. The UK Government pledged in 2011 the development of a new “Skills for the Green Economy” grouping of SSCs to begin to understand the continuing changing requirements of the green economy<sup>235</sup>. However whilst a positive step towards focusing on low carbon skills and encouraging collaboration, the announcement has come in the aftermath of major funding changes and restructure for SSCs.

The shift from core grant funding to a contestable model of funding for the network of SSCs will no doubt impact upon their capabilities to identify and respond to labour market needs. Whilst the new model is designed in principle to be able to respond directly in those sectors with the highest needs, with it comes a general shift in funding and restructure which will undoubtedly affect delivery across the UK.

The Welsh Government has highlighted this issue in a recent Cabinet Paper on skills priorities<sup>236</sup>. The changes have put more pressure on the devolved nations to ensure that

<sup>235</sup> HM Government (2011), *Skills for a Green Economy*

<sup>236</sup> The Welsh Government (2012), *The Welsh Government's Priorities for skills including jobs Growth Wales*

regional employer needs will continue to be met by organisations which will have more of an overarching UK perspective than in previous years. The Welsh Government maintains that through other, existing stakeholder relationships, such as the Wales Employment and Skills Board, Sector Panels and relationships with companies, employer needs will continue to be met despite the changes.

## **6.6 RELEVANT INITIATIVES AT NATIONAL/REGIONAL LEVEL SUPPORTED BY THE EU**

A number of projects have been identified which are supported by European Social Funding in various areas of the UK. Tailored towards a particular local or regional need or sector opportunity, they all strongly evidence the importance of partnership and collaboration between employers, education and training providers and the environment. A demand-led model appears to have been a success factor for most – not only filling the skills needs of the future, but also meeting demand from industry and accounting for employer needs and preferences.

A number of example projects are outlined in the boxes below:

### **Enviroskills<sup>237</sup>**

Aim:

To ensure that high-level environmental skills in the construction, hospitality and care businesses in the South East region of England are in place and appropriate for securing new contracts. One of the South East England Development Agency’s key strategic priorities was to help the region prosper and as such the project focused on the rural economy, social and biotechnology developments.

Key success factor:

A strong partnership approach to ensure high quality training provision meets training gaps identified by businesses.

How it works:

Enviroskills is managed by Business Support Kent. A regional partnership of high quality training providers was developed in order to bridge the gap between standard industry training provision and the need for future environmental technologies. It focused on bio-science topics across a range of sectors, mainly construction, manufacturing, hospitality and care. Businesses involved in the training will be better placed to win new contracts in the future with evidence they have taken steps to invest in developing their employees’ skills relevant to the green economy, or their “green credentials”.

<sup>237</sup> <http://www.esf-works.com/projects/short-reviews/projects/400825>

### **South West Enabling Environmental Technologies (SWEET)<sup>238</sup>**

#### Aim:

To support businesses in the West of England successfully enter the emerging markets of renewable energy, energy efficiency and waste management by increasing the awareness of environmental technologies to improve business efficiency and customer take up, but also by up-skilling the technicians who will be installing such technology.

#### Key success factors:

The programme was planned around the results of a training needs analysis, so is demand-led from an industry and business perspective. The training provision was also delivered very flexibly in order to meet the specific preferences of businesses for short courses of three days or less due to costs and constraints on businesses when releasing staff for training.

#### How it works:

SWEET worked with awarding bodies, after identifying a nationwide shortage of funded training at level 2 and 3 in Further Education colleges. It now directly funds and runs a set of 8 pre-existing courses for those aged 19 and over that will partly address this gap in training provision.

Together with SummitSkills and City and Guilds, SWEET also developed 13 new units in environmental technology which were available from September 2010. Set against the Qualifications and Credit Framework the new units could be flexible enough to not only meet business training requirements but also its preference for short courses. A traditional NQF level 3 qualification involves 240 hours of guided learning with an option to take (and be credited for) a small part of the course. Using the QCF SWEET will develop 13, 10 hour units which can be taken individually as CPD (Continuing Professional Development) or combined to form a broader understanding. Both of these routes are accredited and can lead to a full qualification at award, certificate or diploma level.

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<sup>238</sup> <http://www.esf-works.com/projects/short-reviews/projects/400283>



## **Key Sectors - Environmental Skills Network (ESN)<sup>239</sup>**

### Aim:

Following the identification of a significant knowledge gap in environmental awareness in Cornwall, the ESN aims to support businesses to meet current and new legislation including the Carbon Reduction Commitment and develop their overall skills relating to the environment through structured training and individualised learning.

### Key Success Factors:

Collaborative work with businesses and cross-sector delivery of key qualifications such as Level 2 Chartered Institute of Environmental Health (CIEH) Environmental Principles and Best Practice as a foundation to more specific studies ensures that a wide range of businesses can be supported in the most appropriate way.

### How it works:

The ESN works closely with business to provide an initial diagnostic brokerage (IDB) in order to understand the business aims and from this creates workforce development plans. The plans help to outline the overall training needs of the organisations and also identify the individual learners. The learners then receive information, advice and guidance (IAG) from qualified advisers, who are able to offer a range of achievable options through development of holistic training plans, providing direction and the opportunity for progression and completion of all qualifications undertaken.

Training is then delivered through a partnership with Cornwall College. Following cross-sector delivery of the Level 2 Chartered Institute of Environmental Health (CIEH) Environmental Principles and Best Practice to learners, more specific learning is then provided by the Level 3 course. The Level 3 course provides hands on experience of environmental auditing and working with environmental management systems.

The training and diagnostics are available for companies/SMEs that operate within the environmental sector in Cornwall and in other sectors. Examples of companies include self-employed plumbers or electricians moving in to solar photovoltaic and solar water heating, as well as water treatment specialists, waste recyclers and energy assessors.

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<sup>239</sup> <http://www.esf-works.com/projects/short-reviews/projects/401064>

## Gateway to SusCon<sup>240</sup>

### Aim:

To develop a sustainable construction training centre, delivering new training courses to support businesses to address and understand climate change impacts and sustainable resources.

### Key Success Factors:

Recognising that training needs to be relevant to the needs of employers now and in the future is the main success factor of this project, achieved through the setting up of a curriculum advisory group. This group brings together over 20 organisations to discuss the evolving curriculum and offer insights into industry developments. The employer-led collaboration has extended to higher education establishments across the South East of England with the support of a cross-section of significant industry partners (large and small construction firms, sustainable development experts, manufacturers etc.)

### How it works:

The Gateway to SusCon is a programme of green skills training in all aspects of climate change and sustainable resources. The project recognised the very specialist and fragmented nature of training at present in the industry that sees various disciplines (architects, contractors, engineers, surveyors, planners, etc.) effectively working in isolation. The project works on that principle that for sustainable construction to really work there needs to be integration of efforts across disciplines in all construction projects beyond what currently exists. In the Gateway to SusCon approach, sustainability issues are not optional additions to training but are integral to all areas of learning.

The programme developed a unique modular training curriculum, to support all levels of learning from Entry and introductory level up to continuing professional development (CPD). Whilst being flexible, the programme is set up in such a way to facilitate progression routes for learners. The curriculum brings together effective existing training (delivered by expert trainers) and has created new training offers all under the wider aims of addressing climate change impacts and sustainable resources.

The main eight programme themes are structured in a curriculum: energy efficiency and low and zero carbon supply; water management; waste management; sustainable materials; biodiversity integration; climate change adaptation; project management and supply chain; and - importantly - people and community. Examples of what the project can train learners in include sustainable material specification, rainwater harvesting, environmental design software and alternative sources of energy, all considered in the context of both retrofitting existing property and creating new buildings.

<sup>240</sup> <http://www.esf-works.com/projects/short-reviews/projects/401050>

### **Skills for Climate Change (Newham)<sup>241</sup>**

Aim:

The aim of the project was to identify the key green skills required in the construction and building services sectors and then develop learning tools that will slot into existing level 2 and level 3 qualifications. This will equip London businesses to compete in a changing market.

Key Success Factors:

Recognition of the particular skills challenges faced by SME's compared to Tier One construction companies who are embracing the retrofit agenda in London and will be looking to SMEs to procure services.

How it works:

Using the findings from the Sector Skills Summit, which identified that 94% of building sector and 80% of the construction sector are SMEs, mostly subcontracting to larger buyers the project worked to up-skill this workforce to enable them to provide the services required.

This project in East London identified skills gaps directly related to climate change and responses to it, amongst small to medium-sized enterprises (SMEs) in built environment and construction services. By starting with a research initiative to identify the current 'green' needs in London, learning tools were then developed in order to meet the skills gaps. Areas of interest include energy efficiency, heating and ventilation, and the building envelope.

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<sup>241</sup> <http://www.esf-works.com/projects/short-reviews/projects/400335>

## **Arbed<sup>242</sup>**

### Aim:

A strategic energy performance investment programme in Wales running between 2010-2015, which aims to develop the supply chain and skills base; increase energy efficiency of existing homes; and reduce the impact of fuel poverty by:

1. Creating an evidence base of what works – including the best blend of environmental, social and economic aims – to inform future phases of the programme; and
2. Building capacity in Wales’ supply chain, public sector and communities to deliver effective area-based, whole-house energy efficiency projects.

### Key Success Factors:

Intense activity in regeneration areas to stimulate growth in supply chain and investment

### How it works:

Through intense programmes within Wales’ regeneration areas the programme aims to create sufficient critical mass to generate job growth, attract new investment and stimulate growth for Welsh businesses operating in the energy efficiency and renewable energy sub sectors.

The programme is partnered with Wales’ Home Energy Efficiency Scheme (HEES). HEES is moving towards a ‘whole-house’ or ‘consider-all-options’ approach but, unlike the ARBED programme, will continue to be demand-led.

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<sup>242</sup> <http://wales.gov.uk/topics/environmentcountryside/energy/efficiency/arbed/background/?lang=en> Part funded by the European Regional Development Fund

## Chapter 7: Skills Gaps between the current situation and the needs for 2020

Between 2010 and 2020 the UK population is expected to increase by 3.8 million, or approximately 0.8 million annually<sup>243</sup>. Experiencing a slightly faster rate of growth is the working age population, expected to increase by 2.6 million by 2020<sup>244</sup>. Overall employment however, is only expected to increase by approximately 1.5 million by 2020<sup>245</sup>.

Industries forecast to experience employment growth include those associated with the growing importance of climate change and energy efficiency targets, notably the construction and renewable energy sectors. However, evidence exists already to indicate that many jobs associated with the move to a low carbon economy will not be new, but involve up-skilling, or 'greening' of existing skills. With this comes the opportunities for some workers to simply top up their skills to be able to work with new technology for example<sup>246</sup>. This might be an electrician undertaking additional qualifications in the installation and maintenance of Solar Panels to be proficient as a Solar PV installer or offshore oil or gas technician learning new skills to become proficient in the sector of offshore wind<sup>247</sup>.

### 7.1 LABOUR FORCE EVOLUTION

Between 2008 and 2011 the construction industry experienced an overall decline in employment, losing approximately 300,000 people annually<sup>248</sup>. Despite forecast growth, and the positive changes in the industry brought about by the shift towards a low carbon, energy efficient economy it is predicted that even by 2016, employment in the industry will be lower than its peak in 2008<sup>249</sup>.

Growth is primarily being driven by changes to building standards, such as BREEAM and new, advanced building management systems as well as sustainable methods of construction for example, and will involve a number of new skills and up-skilling of the workforce<sup>250</sup>. As other sector and industries develop their infrastructure and capacity in the run up to 2020, the construction industry will undoubtedly be one of the most affected as it will have to meet supply chain and build requirements such as for new nuclear build and renewable energy<sup>251</sup>.

<sup>243</sup> UKCES (2011), *Working Futures 2010-2020 Evidence Report 41*

<sup>244</sup> Ibid.

<sup>245</sup> Ibid.

<sup>246</sup> Low Carbon Cluster (2009), *Sector Skills Assessment*

<sup>247</sup> Bird, L. and Lawton, K. (2009), *The Future's Green Jobs and the UK Low Carbon Transition*

<sup>248</sup> Experian (2011), *ConstructionSkills Network 2011-2015 Blueprint for UK Construction Skills*

<sup>249</sup> Experian (2012), *ConstructionSkills Network 2012-2016 Blueprint for UK Construction Skills*

<sup>250</sup> HM Government (2011), *Skills for a Green Economy*

<sup>251</sup> Low Carbon Cluster (2009), *Sector Skills Assessment*

### Predicted employment requirements for the built environment sector

Table 22 summarises the total employment growth and number of new recruits that will be required for the construction industry to realise its forecast output from 2012 to 2016. The sub-regions within England required to have the largest employment growth are the South East, South West, North East and Greater London, with the North East needing a relatively high growth in percentage terms, but low number of recruits annually (2,170) compared with the South West which has the slightly less percentage growth but is predicted to need three times as many new recruits (7,220).

**Table 22: Construction industry predicted employment growth and new recruits that would be required to deliver the outputs 2012 – 2016<sup>252</sup>**

Region	Total employment growth	Number of new recruits (annually) <sup>253</sup>
England	1.8%*	36,310
Scotland	5.4%	4480
Wales	11.6%	4280
Northern Ireland	6.7%	1170
<b>UK</b>	<b>6.4%*</b>	<b>42,880</b>

\*Average growth

The highest percentage employment growth is required for Wales, despite having relatively low growth in terms of output. Most of the growth in Wales is anticipated to be in the building repairs and maintenance sectors<sup>254</sup>. Whilst declining in other areas of the UK, the growth of skilled trade occupations in Wales forms a key part of the Welsh Government's recent Cabinet Paper on skills, specifically calling for post-16 providers to be more responsive at a local level to meet these needs<sup>255</sup>. Better links between providers and employers and use of Labour Market Information (LMI) is highlighted in particular, and a Labour Market Unit has been set up to develop this further<sup>256</sup>.

### Anticipated requirement of changes to employment in the building sector

Table 23 below provides a summary of levels of recruitment forecast to be required among the blue collar workforce in the building sector, through to 2016. Certain occupations are expected to require fewer numbers (although not in all regions), and this should be taken into consideration as regards the capacity of the existing and future workforce to achieve the

<sup>252</sup> Experian (2012), *ConstructionSkills Network 2012-2016 Blueprint for UK Construction Skills*

<sup>253</sup> Definition of the Annual Recruitment Requirement = an indication of the number of new employees that would need to be recruited into construction each year in order to realise forecast output (Experian 2012)

<sup>254</sup> Experian (2012), *ConstructionSkills Network 2012-2016 Blueprint for UK Construction Skills*

<sup>255</sup> The Welsh Government (2012), *The Welsh Government's Priorities for Skills including Jobs Growth Wales*

<sup>256</sup> Ibid

2020 energy targets<sup>257</sup>.

**Table 23: Annual recruitment requirement by occupation and nation  
- 2012 2016<sup>258</sup>**

Occupation	Total Employment			
	UK	Scotland	Wales	Northern Ireland
<i>Wood trades and interior fit-out</i>	263,290	30,700	14,900	9,060
	<b>277,770</b>	<b>38,120</b>	<b>17,900</b>	<b>7,870</b>
<i>Bricklayers</i>	66,840	3,630	4,480	3,690
	<b>63,120</b>	<b>3,150</b>	<b>4,850</b>	<b>3,680</b>
<i>Building envelope specialists</i>	94,970	5,240	4,400	1,950
	<b>100,390</b>	<b>5,300</b>	<b>4,850</b>	<b>2,420</b>
<i>Painters and decorators</i>	116,060	8,740	4,070	2,900
	<b>112,540</b>	<b>9,290</b>	<b>4,300</b>	<b>2,670</b>
<i>Plasterers and dry liners</i>	49,450	3,590	2,970	1,980
	<b>51,470</b>	<b>4,120</b>	<b>3,440</b>	<b>2,050</b>
<i>Roofers</i>	39,250	3,590	600	1,350
	<b>40,250</b>	<b>4,120</b>	<b>670</b>	<b>1,430</b>
<i>Floorers</i>	33,220	2,690	1,540	600
	<b>33,700</b>	<b>2,610</b>	<b>1,510</b>	<b>690</b>
<i>Glaziers</i>	28,130	1,710	1,580	870
	<b>26,940</b>	<b>1,700</b>	<b>1,530</b>	<b>1,000</b>
<i>Other specialist building operatives</i>	54,980	6,380	2,390	1,640
	<b>52,990</b>	<b>5,400</b>	<b>2,860</b>	<b>1,640</b>
<i>Scaffolders</i>	20,180	3,200	2,040	330
	<b>20,300</b>	<b>2,560</b>	<b>2,540</b>	<b>270</b>
<i>Steel erectors/structural</i>	29,480	3,510	1,730	1,180
	<b>29,630</b>	<b>4,000</b>	<b>2,010</b>	<b>1,030</b>
<i>Other labourers</i>	86,170	8,210	5,180	3,080
	<b>89,720</b>	<b>7,280</b>	<b>5,860</b>	<b>3,460</b>
<i>Electrical trades and installation</i>	195,110	16,320	8,540	5,240
	<b>209,290</b>	<b>13,720</b>	<b>8,290</b>	<b>6,450</b>
<i>Plumbing and heating/ventilation/air conditioning trades</i>	175,490	15,180	7,080	4,140
	<b>177,400</b>	<b>13,530</b>	<b>7,870</b>	<b>4,960</b>

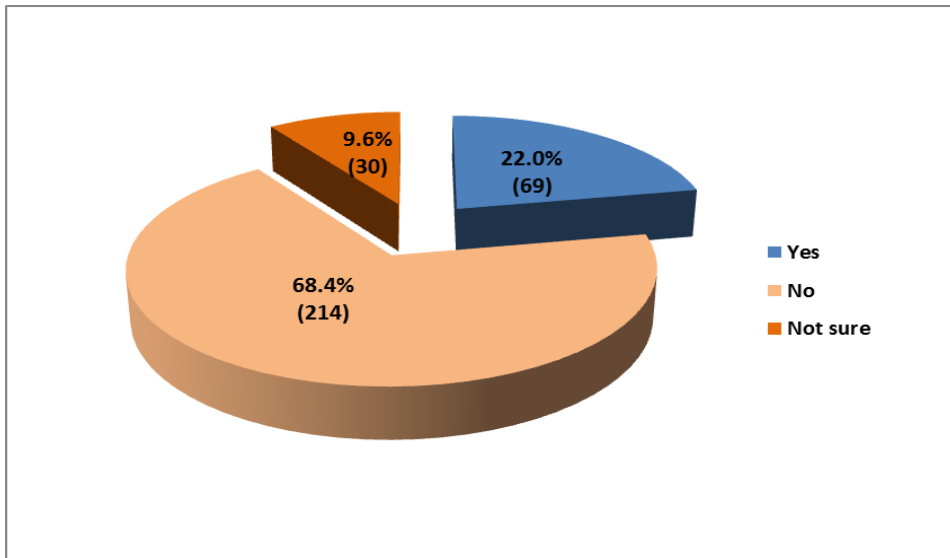
### Emergence of new occupations

The majority of employers interviewed for this research do not believe that new occupations will emerge as a result of the energy efficiency agenda; as Figure 9 below shows, nearly 70% of respondents do not expect new job roles to be created.

<sup>257</sup> Capacity within the workforce is discussed in more detail in Section 7.8

<sup>258</sup> Experian (2012), *ConstructionSkills Network 2012-2016 Blueprint for UK Construction Skills*

**Figure 9: Employer perceptions as to whether new occupations will be created by the energy efficiency agenda**



Base 313

Feedback from focus groups and stakeholder interviews indicates that the majority of industry respondents expect existing jobs to evolve in order to respond to the green agenda, and that completely new job roles (with the exception of those created by the Green Deal) are unlikely to be widespread.

*"There will not be new occupations – just a greater need for multi-skilled operatives"*

**Focus group feedback**

There is broad consensus across all nations that the trend is likely to be for multi-skilling as existing jobs are expected to evolve. However among those respondents that do consider some new job roles will be created, potential occupations could include some or all of the following:

- Energy inspectors;
- Solar panel installers;
- Energy efficiency officers;
- Solar energy engineers;
- Renewable energy engineer;
- Low carbon site manager (only in large companies);
- Low carbon consultant (less likely as would increase site costs).

However stakeholders note that as Research and Development activities increase, this could



impact on emerging occupations over time.

### Workforce estimates up to 2020 for the blue collar workforce in the building sector

Industry stakeholders interviewed for this research point out that there is still a great deal of uncertainty for the building sector which is still feeling the impacts of the economic downturn. An ageing workforce presents a risk in relation to current and future capacity within the sector – particularly as at the moment there is no guarantee that those that retire are being replaced by new recruits. In Wales stakeholders and providers suggest that lack of funding for training is contributing to reluctance among employers to up-skill their staff – which in turn is putting off potential new recruits for the industry.

The UK Commission for Employment and Skills (UKCES) predicts in its highly detailed 2011 report on the future of UK employment that the construction industry will grow by an average of 1.1% between 2010 and 2020<sup>259</sup>. This means that, at this rate of growth, it will not return to pre-recession levels of total employment before 2020. In 2006 terms Gross Value Added (GVA) in the industry will rise by around 30% between 2010 and 2020.

*"... given the scale of the expected fiscal cuts over the next five years and the impact this will have on construction output, it might be almost 2020 before employment levels return to the 2.3-million peak in 2008."*

**UKCES**

The International Monetary Fund is expecting PPP-adjusted UK GDP to increase by around 4.5% by the year 2020 but internal, non-adjusted figures average around 2.3% per annum for the period 2015-2020<sup>260</sup>.

For the purposes of the projected employment figures below we have elected to work with the UKCES projections as developed by the Institute of Employment Studies at Warwick University for the *Working Futures* study. These projections - at an average of 1.1% growth - are more conservative than others but are adjusted to reflect actual employment growth in the construction sector as opposed to overall growth in GDP or GVA over the same period.

Using these figures we would conservatively expect construction employment to grow as follows in Table 24 over the period to 2020. The reader should be aware, though, that an increasing margin of error applies to all of these figures throughout the period based on the uncertainty of growth (or shrinkage) in public sector demand, the overall performance of the UK economy, and even the relative uncertainty which still exists at the time of writing over the way in which Euro-area national and private debt will be handled and the potential impact on the currency itself and on possible national defaults.

<sup>259</sup> UKCES (2011), *Working Futures, 2010-2020*

<sup>260</sup> Price Waterhouse Coopers (PWC) (2011), *UK Economic Outlook*

**Table 24: Estimated construction employment by blue collar occupational group (2011-2020)**

Occupation	2011	2012	2015	2016	2017	2018	2019	2020
Electricians & electrical fitters	277000	278662	281727	284826	287959	291127	294329	297567
Bricklayers & masons	12000	12072	12205	12339	12475	12612	12751	12891
Roofers, roof tilers & slaters	43000	43258	43734	44215	44701	45193	45690	46193
Plumbers & heating/ventilation engineers	190000	191140	193243	195368	197517	199690	201887	204107
Carpenters & joiners	217000	218302	220703	223131	225586	228067	230576	233112
Glaziers, fabricators & fitters	45000	45270	45768	46271	46780	47295	47815	48341
Plasterers	58000	58348	58990	59639	60295	60958	61629	62306
Floorers & wall tilers	41000	41246	41700	42158	42622	43091	43565	44044
Painters & decorators	118000	118708	120014	121334	122669	124018	125382	126761
Scaffolders, staggers/riggers	31000	31186	31529	31876	32227	32581	32939	33302
Construction operatives	85000	85510	86451	87402	88363	89335	90318	91311
Steel erectors	12000	12072	12205	12339	12475	12612	12751	12891
Construction & building trades nec*	226000	227356	229857	232385	234942	237526	240139	242780
<b>TOTAL</b>	<b>1,355,000</b>	<b>1,363,130</b>	<b>1,378,124</b>	<b>1,393,284</b>	<b>1,408,610</b>	<b>1,424,105</b>	<b>1,439,770</b>	<b>1,455,607</b>

\*Not elsewhere classified

The above figures assume largely static employment in the UK construction sector 2012-2014. This assumption is based on the calculations of the IMF (Global Economic Forecast 2012) and the parallel projections of the UKCES Working Futures report that construction will experience negative growth in 2012 and into 2013 and will only begin to grow in real employment terms in late 2013.

## 7.2 POLICY IN RELATION TO GREEN SKILLS AND JOBS

The UK Government's Skills for a Green Economy, builds upon Enabling the Transition to a Green Economy<sup>261</sup> and outlines proposals including:

- Funding for up to 1,000 Green Deal Apprenticeships;
- Raising awareness of the green economy via Unionlearn;
- Improving information, advice and guidance in relation to green skills training provision;

<sup>261</sup> Skills proposals within this report were designed to build upon the needs outlined in the context of BIS' Skills for Sustainable Growth – however the latter report makes no mention of green skills

- Maintaining policy focus on science, technology, engineering and mathematics.

Whilst this report goes some way towards defining green skills policy, evidence suggests there is arguably still a lack of clarity in relation to a fully joined up green skills strategy for the UK.

The Greener Job Alliance was formed to encourage a more coherent and joined up approach to deliver green jobs and skills in the UK. Its members state that the UK Government's current market-driven policy will not deliver the training and green skills required, and that *Skills for a Green Economy* offers a summary of the evidence but no clearly defined action plan. The Alliance advocates a need to fast-track development of relevant qualifications and accreditations for green skills; the implementation of green skills into the school curriculum; the reversal of potentially damaging funding cuts in education; and the appointment of a Minister with responsibility for green skills<sup>262</sup>.

Skills and job strategies are also fragmented at regional levels, and the extent of progress is very much dependent on the agendas of those that exert influence – such as Local Authorities and Local Enterprise Partnerships (LEPs). For example in Yorkshire the Leeds LEP commissioned in 2011 a report into the prospects of Green Jobs for the region. Similarly in Greater Manchester the Association of Greater Manchester Authorities (AGMA) has developed a low carbon skills and employment work programme intended to harness the opportunities offered by a green economy. However this level of activity is not maintained UK-wide.

The green skills infrastructure in the UK therefore appears to be in the early stages of development despite the publication of numerous reports that indicate the high potential for green jobs<sup>263</sup>. In September 2011 the Aldersgate Group stated that there had been limited progress, rather a step backwards, in relation to the UK Government's development of a green skills strategy.<sup>264</sup>

The REA recommends that the UK Government should outline a clearer, joined up policy framework, a national skills strategy for renewable energy and stronger leadership in relation to the achievement of renewable energy targets. For example DECC's consultation into the Green Deal and ECO closed in January 2012 but a response has yet to be published.

*"The future is... potentially bright but it will not happen on its own... there's a long way to go to achieve the kind of supportive, joined up approach that is required"*

**Renewable Energy Association**

<sup>262</sup> Greener Jobs Alliance (2012), *Manifesto*

<sup>263</sup> Not all research backs this up – notably the estimated numbers of green jobs that will be created has been challenged by the Global Warming Foundation in their 2011 report *The Myth of Green Jobs*

<sup>264</sup> <http://www.greenwisebusiness.co.uk/news/green-skills-and-training-special-bridging-the-green-skills-gap-2567.aspx>

A more positive development is the National Skills Academy for Environmental Technologies (NSAET)<sup>265</sup>, which was officially launched by SummitSkills in February 2011. The NSAET was formed to “transform the way the sector plans, develops and delivers renewable and environmental technology skills”<sup>266</sup>.

In addition to the NSAET, a number of other sectors have set up National Skills Academies (NSAs) to support the development of skills in their industries including the NSA for Construction (set up by CITB-ConstructionSkills) for example. The NSA for Nuclear (Cogent) has also set up a Nuclear Skills Passport that forms part of the Nuclear Industry Training Framework and aims to retain high quality skills and support skills forecasting in the sector. The NSA for Power (Energy and Utility Skills) recently announced (in February 2012) that it will be collaborating with the Energy Institute to improve its development of skills and focus on industry good practice.

The UK Government also announced the expansion of Technical Schools and Academies in 2010. University Technical Colleges (UTCs) could have a significant role to play in developing skills for the future low carbon economy. With a focus on subjects requiring technical and modern equipment including engineering, produce design, health sciences, construction and land and environmental services, UTCs will be heavily influenced by employers and aim to increase expectations and opportunities for those young people who do not want to take an academic route to employment<sup>267</sup>.

In other nations there have been a number of more clearly defined policy developments in relation to green skills and jobs. The Scottish Government published its Green Jobs Strategy in 2005, and since then a number of developments have contributed to preparing for the transition to a green economy:

- Green Academies, run by Scottish Gas, will train a ‘green army’ to install eco technology in Scottish homes during 2012. This scheme is expected to support 447 green energy jobs including 77 new job and Apprenticeships;
- Skills Development Scotland published its Energy Skills Investment and Action Plan, launched in March 2011 and delivered in conjunction with Scotland’s Energy Skills Action Group. By early 2012 an energy skills database had been created, with additional plans to address qualification and skills gaps, as well as a commitment to a Flexible Training Framework to provide short courses enabling application of existing skills in the new energy efficiency context;
- 2011 saw the launch of a Low Carbon Skills Fund to assist the sector to up-skill its workforce – the Skills Investment Plan recommends the extension of Flexible Training Opportunities and the Low Carbon Skills Fund;
- Up to £1 million will be made available to create up to 500 Modern Apprenticeships in

<sup>265</sup> [www.nsaet.org.uk](http://www.nsaet.org.uk)

<sup>266</sup> <http://www.summitskills.org.uk/renewables/474>

<sup>267</sup> <http://www.utcolleges.org>

Scotland's energy and low carbon industries for 2011/2012, with an additional £2 million announced for 1,000 flexible training places in energy and low carbon for 2012/2013.

In Wales a £1.8 million project to deliver low carbon skills is being supported by the European Social Fund, aiming to train over 1,000 individuals across nearly 500 organisations. A demand-led Training Framework for low carbon skills in regeneration and the built environment has been funded through CITB-ConstructionSkills Wales and the Centre for Regeneration Excellence Wales.

### 7.3 SKILLS NEEDS IN THE BUILDING SECTOR

Whilst the focus of this work is on the tradesmen involved in the building sector, there is also a need to acknowledge the requirements for leadership and management and other generic rather than purely technical skills in meeting the energy efficiency and renewable technology targets of 2020. The rationale for this is that without effective leadership and planning within the building sector to recognise and identify the future skills requirements and skills gaps to meet 2020 targets, the sector will undoubtedly struggle.

#### Leadership and Management Skills

Improved leadership and management skills are essential to ensure all businesses are both realistic and pro-active about their skills needs in such a changing economy<sup>268</sup>.

Although still in relative infancy, the transition to a low carbon economy has resulted in a wide range of studies concluding that there is a requirement for improvement in general leadership and business management skills across all sectors in order to develop the workforce and skills needed. In the building services engineering sector for example, business management and project management skills at operational level were identified to be vital to creating a low carbon industrial base, particularly during start-up and infrastructure development phases having been identified as already having a potential influence on how well some companies may have performed during the current economic downturn even<sup>269</sup>.

#### Science, Technology, Engineering and Mathematics (STEM) skills

STEM skills at all levels and for all emerging sectors and technologies have been identified as one of the main challenges of meeting the targets for a low carbon economy at a national level<sup>270</sup>. STEM skills are purported to be key for both increasing interest in low carbon skills,

<sup>268</sup> This has been identified as a pan sector requirement in many studies, from the *Leitch Review of Skills* in 2006 to the *Low Carbon Industrial Strategy* in 2009 to Business in the Community's 2010 report *Leadership Skills for a Sustainable Economy*

<sup>269</sup> Low Carbon Cluster (2009), *Sector Skills Assessment*

<sup>270</sup> Department for Business, Innovation and Skills & Department of Energy and Climate Change (2010), *Meeting the Low Carbon Skills Challenge: A Consultation on Equipping People with the Skills to take Advantage of Opportunities in the Low Carbon and Resource Efficient Economy*; Low Carbon Cluster (2009), *Sector Skills Assessment*

qualifications and careers<sup>271</sup> as well as meeting the required skills for business management and project management across many industries, particularly engineering<sup>272</sup>.

Respondents to this research broadly agree that STEM skills are critical for the building sector.

#### **7.4 SPECIFIC SKILLS & KNOWLEDGE NEEDS AND GAPS IN THE BLUE COLLAR BUILT ENVIRONMENT SECTOR WORKFORCE**

##### **Scotland**

Skills identified as priority needs for the Scottish blue collar workforce in the built environment sector are predominantly improvements to existing skills rather than new occupational skills (with the exception of energy advisors and assessors).

Stakeholders state that Scotland's businesses lack leadership and management skills rather than on-site skills. On-site workers are considered to be already well skilled – they may need to up-skill in line with technological development but on the whole they are very competent – stakeholders are more concerned about gaps in management skills for the sector.

##### **Wales**

In their Green Jobs Strategy, the Welsh Government identified that a range of skill sets would be required by onshore wind power generating companies in particular as they look to expand in Wales<sup>273</sup>. This was identified as an absolute priority in order for Wales to realise and benefit from the potential of this renewable energy sub sector.

Wales is taking a proactive approach to developing the energy efficiency and renewable energy markets and skills base through its Arbed programme<sup>274</sup>. Rather than taking a demand-led approach, the programme is now in its third year of working to strengthen the supply chain and stimulate growth and investment in the sector. The coordinated approach hopes to see increased growth for businesses operating within the sub-sectors coupled with planned training and jobs matching schemes and programmes to support the qualification and accreditation of local contractors. However feedback from focus group discussions suggests that the delay of the second phase of the Arbed programme is acting as a major barrier to skills development; with some companies actually losing the capacity built via Phase 1 of the programme.

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<sup>271</sup> Ibid.

<sup>272</sup> Low Carbon Cluster (2009), *Sector Skills Assessment Report*

<sup>273</sup> Welsh Assembly Government (2009), *Capturing the Potential – A Green Jobs Strategy for Wales*

<sup>274</sup> <http://wales.gov.uk/topics/environmentcountryside/energy/efficiency/arbed/greenjobs/?lang=en>

Feedback in relation to the first phase of Arbed considered potential barriers in relation to skills – gaps were predominantly in relation to design, leadership and management and a lack of capacity of higher level and technical skills. A lack of qualified surveyors was also presented as a concern.

### Northern Ireland

The Skills Strategy for Northern Ireland identified STEM skills as a particular requirement in the run up to 2020 acknowledging the increased importance they will have in the future in order to meet forecast growth<sup>275</sup>.

Previous research acknowledges that the construction industry in Northern Ireland will need to take into account the improving awareness of businesses of the sustainability agenda in identifying skills gaps, however identifying those gaps moves on little further from here<sup>276</sup>.

As one of Northern Ireland’s largest single industrial sectors, employing 85,000 people and having a total annual total output of £3.4billion<sup>277</sup>, the potential for growth and change within Northern Ireland as a result of the shifts needed within construction in the run up to 2020 is significant. Research which identifies the specific skills gaps and requirements in this nation across the relevant sub-sectors is required to effectively plan for the future.

### Building services engineering

SummitSkills<sup>278</sup> have identified that extensive training is required within the sector to be able to meet the future requirements of installing environmental technologies, however they have observed that the data available from employers is generally regarding current operative requirements rather than future skills requirements<sup>279</sup>. Previous research with employers has identified that the main motivator for training is not to have a trained workforce but to merely meet legislative requirements and protect the employer from litigation or prosecution<sup>280</sup>.

### Power and renewables

With manufacturing and transport infrastructure dependent on power, EU Skills<sup>281</sup> reports significant and growing skills shortages at technician and engineer levels, with specific skills gaps around designers, planners, project engineers, system controllers and project managers, and increasing demand for more and more power.

For the renewable energy sector overall it has been estimated that growth could provide for

<sup>275</sup> Department for Education and Learning Northern Ireland (2011), *Skills Strategy: Success through Skills, Transforming Futures*

<sup>276</sup> CITB-ConstructionSkills Northern Ireland (2008, updated 2010), *Sector Skills Agreement for the Construction Industry in Northern Ireland*

<sup>277</sup> <http://www.cefni.co.uk/cms/ShowPageContent.aspx?CODE=ACEF>

<sup>278</sup> [www.summitskills.org.uk](http://www.summitskills.org.uk)

<sup>279</sup> Ibid

<sup>280</sup> Ibid

<sup>281</sup> [www.euskills.co.uk](http://www.euskills.co.uk)

up to 160,000 new jobs by 2020, requiring sets of skills in traditional construction crafts such as electricians, plumbers and building service engineers that bring together understanding of new operating systems as they develop<sup>282</sup>.

The UK offshore wind industry is expected to make the single biggest contribution to the UK Government’s target of 15% of energy from renewable sources by 2020<sup>283</sup>. However the wind industry has been facing skills shortages for some time with more than half of companies reporting vacancy levels above 5%<sup>284</sup>. In terms of current employment levels, 3,100 FTEs were employed in off-shore wind in 2010, of which 41% were estimated to be in construction and installation<sup>285</sup>.

### Multi-skilling

Work and skills in the built environment have, historically been operating on a very specialist basis, with workers more often than not being qualified as an electrician or plumber specifically for example, rather than being multi-skilled<sup>286</sup>. The shift to new energy efficiency and renewable technologies however in the building industry such as internal solid wall insulation for example, could herald a shift towards a more multi-skilled workforce (for example solid wall insulation requires electrical sockets, central heating pipes and radiators to be moved, traditionally requiring qualified electricians or plumbers)<sup>287</sup>. Generally it is expected that there will be high demand for a construction workforce over the next 50 years that is multi-skilled, with precise needs for IT literacy and high mechanisation<sup>288</sup>. This potential change is supported by the general trend in the literature that argues the majority of skills needs are in fact for up-skilling as opposed to developing new, specialist skills.

*“Many of the skills required to support the transition to a green economy will not be new but will involve doing existing activities with a distinctive green economy awareness and understanding”*

#### **BIS (2011) Skills for a Green Economy**

*“Emphatically it is about up skilling/enhancement – not a need for new skills... There may be a need for higher skills and understanding to be blended. A roofer for example can build a fantastic roof but probably lacks the capacity to install solar panels as he does not have the knowledge or qualifications... need to combine skills of a roofer, an electrician and an engineer to get the best results”*

*“The skills are there – we may need to multi-skill, there may be more crossover but the skills exist”*

#### **Feedback from focus groups and stakeholder interviews**

Primary research supports this, with examples cited by respondents including:

<sup>282</sup> Foresight Group (2008), *Powering Our Lives: Sustainably Energy Management and the Built Environment*

<sup>283</sup> Renewable UK (2011), *Working for a Green Britain: Employment and Skills in the UK Wind and Marine Industries*

<sup>284</sup> Low Carbon Cluster (2009), *Sector Skills Assessment*

<sup>285</sup> Ibid

<sup>286</sup> Scottish Government (2011), *Energy Efficiency and microgeneration in the built environment*

<sup>287</sup> Ibid

<sup>288</sup> Foresight Group (2008), *Powering Our Lives: Sustainable Energy Management and the Built Environment*



- Roofers needing to install solar panels and therefore also require some electrical and IT knowledge;
- Dry-liners taking on internal insulation activities;
- Cladders taking on external insulation activities.

A significant focus will also have to be placed on up-skilling the existing built environment workforce to focus on renewables, build closer relationships with energy suppliers and to be able to interpret and act on new legislation and targets<sup>289</sup>.

Research undertaken into issues surrounding the delivery of low carbon buildings, in particular for energy efficiency, also concluded that there need to be general improvements to training across the industry to improve understanding of the principles of heat loss<sup>290</sup>. Specific research examples where lack of understanding of both installers and occupiers has resulted in the thermal performance of measures being compromised included air tightness and ventilation, cavity wall insulation, loft insulation and roof insulation. The research recommended improvements are needed to the understanding of what affects the performance of different insulation materials in particular.

This is supported by recent work into the skills required for the Green Deal, which identified that current provision lacks the specialist details required for solid wall insulation and roof insulation, but also in environmental technologies, building regulations and energy performance assessment and is also largely focused on the theory with little practical content<sup>291</sup>.

#### Green Deal

The majority of respondents to this research point to a major concern in relation to skills needs for the Green Deal. This financing mechanism is due for launch in the autumn of 2012, however the Department of Energy and Climate Change has yet to publish its response to a consultation about the details of the scheme, which closed in January 2012. Currently therefore there is a major gap in training and qualifications, as providers and employers still await clear guidance as to what kind of training and accreditation will be required. For the most part, it will be the blue collar workforce at the coalface that will carry out Green Deal work. Therefore this delay of clear guidance is a significant concern – and means there is a risk that insufficient numbers within the workforce will be trained in time for the launch of Green Deal.

### 7.5 SKILLS AND KNOWLEDGE GAPS

The UK Commission for Employment and Skills (UKCES) in 2010 cited low carbon as a key

<sup>289</sup> Ibid

<sup>290</sup> The Centre for Low Carbon Futures (2011), *The Retrofit Challenge – Delivering Low Carbon Buildings*

<sup>291</sup> CITB-ConstructionSkills (2012), *Research to Support the Development of a Green Deal Competency Framework*

driver of future change, but that the industry is seriously affected by skills shortages in the energy sector<sup>292</sup>. The Renewable Energy Association refers to a “skills time bomb” in their April 2012 report, stating that “without determined intervention, skills shortages will be acute”<sup>293</sup>.

Primary research conducted to inform this report strongly suggests that for the building sector, concerns do not relate purely to skills shortages – substantial gaps in relevant knowledge should be considered a serious issue in relation to achievement of the 2020 energy targets. It has been estimated that around 80% of buildings standing in 2050 will be part of existing stock, and therefore skills and knowledge in relation to retrofit will become increasingly significant in working towards the targets.

At operative level, awareness of site sustainability may be low. Feedback from primary research suggests there is a concern within the industry about the extent of knowledge and understanding of the age and fabric of buildings – an issue that “comes up time and time again”<sup>294</sup>.

Industry stakeholders cite the following skills and knowledge needs for the blue collar workforce in the building sector up to 2020:

- Ability to install different energy efficiency systems and knowledge to identify which best suits the needs of a range of buildings (in relation to age and fabric);
- Installation of solid wall and cavity wall insulation, and the types of building fabrics for which they are suitable;
- Understanding of how different energy efficiency measures will impact on other installations (current and future) within a building, and the structural implications (for example air tightness) of implementing changes;
- Understanding of the implications of “getting it wrong” in relation to air tightness in particular;
- Knowledge of a range of different types of insulation treatments and their suitability for various buildings;
- Ability to use geotechnical measurement equipment;
- Ability to work with more precise tolerances and a greater degree of technical accuracy;
- Traditional craft skills to be enhanced with knowledge and understanding of new technologies and energy efficient materials, as they emerge;
- Skills in installations of switches and thermostats;
- Awareness of building regulations and how they will continue to evolve over time;
- Knowledge of different types of low carbon materials – including the design lifecycle;
- Skills in nuclear new build (required to create sufficient energy to sustain the UK’s

<sup>292</sup> UKCES (2010), *National Strategic Skills Audit*

<sup>293</sup> Renewable Energy Association (2012), *Renewable Energy: Made in Britain*

<sup>294</sup> Cited as an issue across all focus groups as well as the majority of stakeholder interviews

- power supply);
- Skills in Building Information Modelling (BIM)<sup>295</sup>.

Non-technical skills and knowledge are considered to be of equal importance particularly in relation to the Green Deal. For example energy assessors and advisors<sup>296</sup> will need excellent communication skills to be able to explain the financing mechanism and different options to a range of different types of customer. Administrative skills will also be important – respondents expect additional paperwork as a result of the need to keep up with new legislation and regulations as they are introduced. It is likely too that more holistic working across sub-sectors of the building industry will be needed therefore a greater understanding of the range of occupations and how they can function collaboratively will be necessary.

As stated earlier the scope of this work is the blue collar, on-site workforce – however a number of respondents strongly recommended the need to address skills gaps in the professional workforce as well if the energy targets are to be achieved.

*"The on-site workforce and the tradespeople possess a good range of skills that will no doubt need to develop and adapt but with training and use should do so without much problem – there is more of a concern for the professional workforce which needs to upgrade training and up skill, especially architecture and civil engineering and surveying"*

**Focus group feedback**

In addition to leadership and management skills and procedures, other concerns relate to gaps for:

- Architects (low carbon design skills);
- Planners (understanding of energy efficiency targets and how they should be taken into consideration);
- Civil engineers (understanding of low carbon materials and installation processes; knowledge of energy efficiency targets);
- Surveyors (understanding of energy efficiency targets and impacts of energy efficiency measures – or lack of them);
- Site supervisors (understanding of the processes and quality standard of completed work needed to meet low carbon requirements).

<sup>295</sup> Defined by the Royal Institute of British Architects (RIBA) as: *digital representation of physical and functional characteristics of a facility creating a shared knowledge resource for information about it forming a reliable basis for decisions during its life cycle, from earliest conception to demolition*

<sup>296</sup> Out of scope for this research but their primary role in contributing towards the 2020 energy targets requires that potential skills and knowledge gaps are at least addressed briefly in this report. Further information on the priority skills and knowledge needs for energy assessors and advisors can be found in CITB-ConstructionSkills (2012) *Research to support the development of a Green Deal Competency Framework*

### Skills and knowledge scoring – current levels and future needs

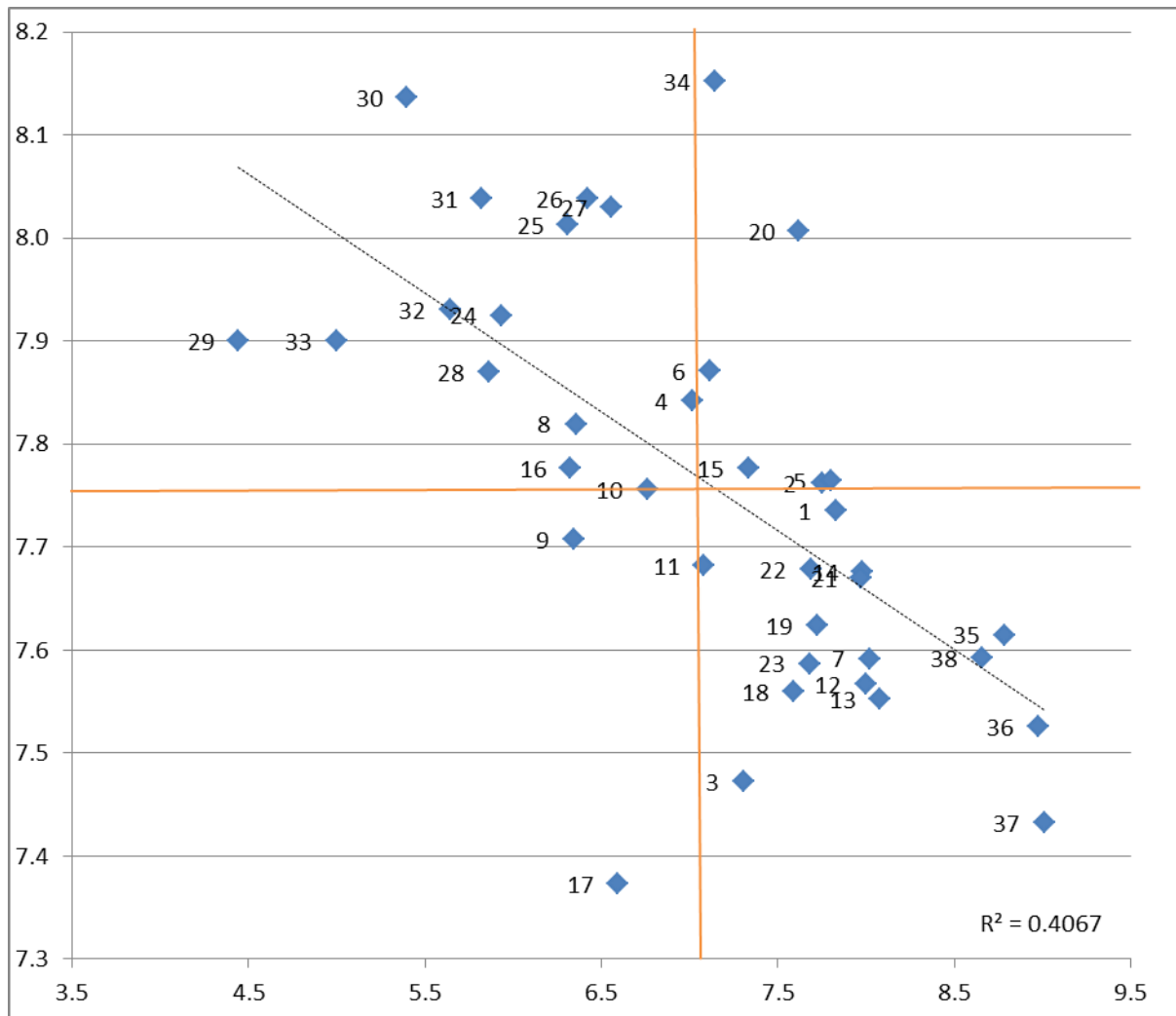
This work has utilised Pye Tait’s skills scoring method to determine the highest priority skills and knowledge needs for the workforce, the extent to which the existing workforce possesses these, and where there are gaps.

Figures 10 and 11 below indicate a very low level of disagreement across the range of respondents (as shown by a pattern of similar scores and low levels of discrimination). In relation to knowledge needs the range of scores is particularly low and could suggest that all requirements cited in the chart are equally urgent, with the exception of knowledge of building regulations.

Within each chart the horizontal axis relates to employers’ estimate of their employees’ current skill level, and the vertical axis relates to employers’ view on how the need for the given skill will change as a result of the 2020 energy targets.

The upper left quadrant contains those skills and knowledge that are (relatively) regarded as having the lowest current levels and highest future need. The upper right quadrant indicates highest levels of current skills and knowledge (and high future needs). Each separate skill or knowledge requirement is indicated by a number – keys explaining these are presented below each chart, with the priorities (lowest current levels and highest future needs) shown in **bold**.

**Figure 10: Current skill levels and future needs for the blue collar workforce in the building sector<sup>297</sup>**



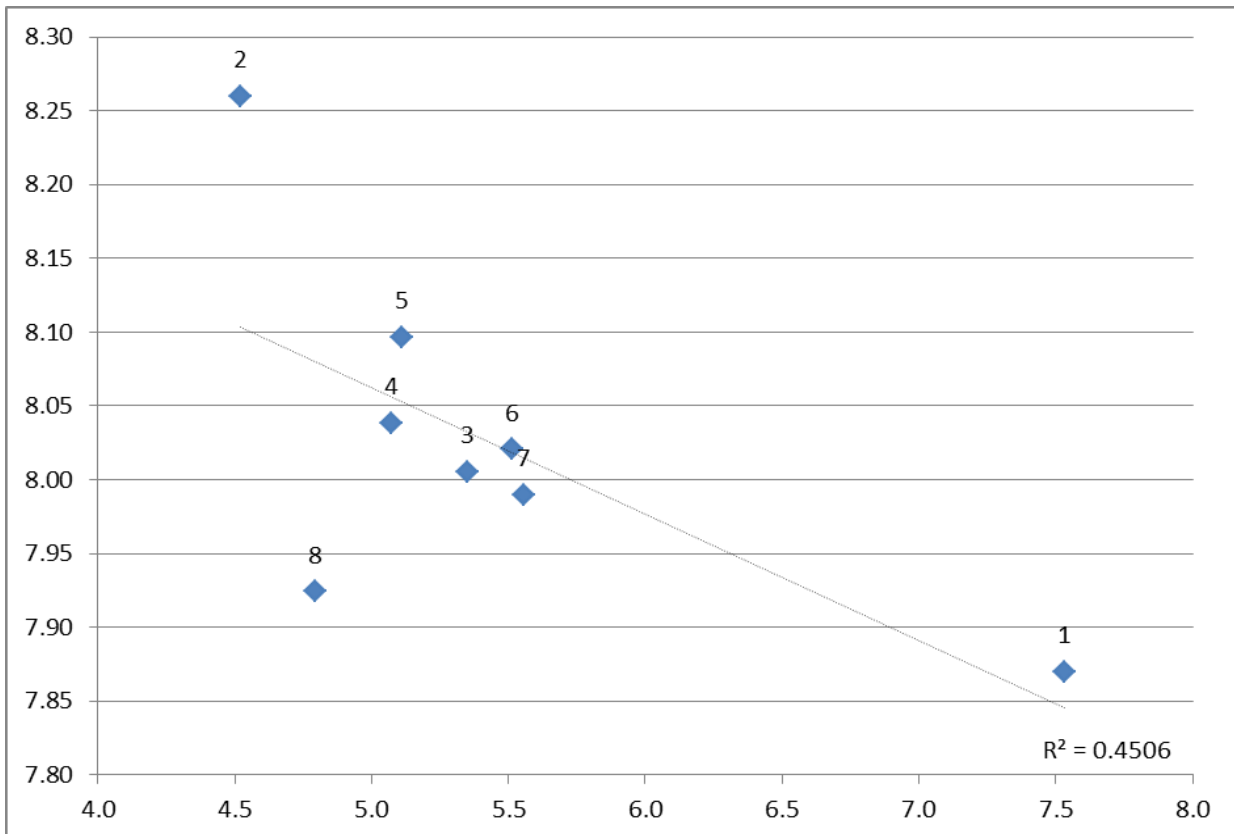
Horizontal (estimate of current skill levels) and vertical (future need for the skill) axis show scores from 1-10

<sup>297</sup> Orange lines represent the mean scores on each axis

### Key – skills needs

1	Condensing boilers
2	Gas boilers
3	Oil boilers
4	Solid fuel burners
5	Heating controls
6	Underfloor heating
7	Radiators
8	Flue-gas heat recovery systems
9	Gas-fired warm air heating systems
10	Electric storage heaters
11	Cavity wall insulation
12	Loft insulation
13	Roof insulation
14	Internal wall insulation
15	External wall insulation
16	Air conditioning
17	Air handling units and filters
18	Draught-proofing
19	Floor insulation
20	Heating system insulation
21	Energy efficient glazing and doors
22	Lighting fittings
23	Lighting controls
<b>24</b>	<b>Ground source heat pumps</b>
<b>25</b>	<b>Air source heat pumps</b>
<b>26</b>	<b>Solar thermal</b>
<b>27</b>	<b>Solar PV</b>
<b>28</b>	<b>Biomass boilers and stoves</b>
<b>29</b>	<b>Shallow geothermal systems</b>
<b>30</b>	<b>Energy efficient cooling systems</b>
<b>31</b>	<b>Ventilation energy recovery systems</b>
<b>32</b>	<b>Micro-combined heat and power</b>
<b>33</b>	<b>Micro and small scale wind turbines</b>
34	Use of new technologies (among craftsmen)
35	Health and safety awareness
36	Customer service skills
37	Communication skills
38	Carrying out risk assessments

**Figure 11: Current knowledge levels and future needs for the blue collar workforce in the building sector**



Horizontal (estimate of current knowledge levels) and vertical (future need for the knowledge) axis show scores from 1-10

#### Key – knowledge needs

1	Building regulations
2	<b>Energy efficiency funding mechanisms</b>
3	<b>Pros &amp; cons of energy efficient measures across different types of building fabrics</b>
4	<b>Pros &amp; cons of energy efficient measures for buildings constructed pre and post 1919</b>
5	<b>Pros &amp; cons of energy efficient measures in hard to treat buildings</b>
6	<b>Different types of energy efficient building materials and technology systems</b>
7	<b>Air quality, air tightness and ventilation requirements for buildings</b>
8	<b>'Hierarchy' of energy efficiency measures</b>

## 7.6 QUALIFICATION NEEDS

Stakeholders in the building sector strongly argue that there is a need for a greater number of accredited qualifications based on National Occupational Standards (NOS) rather than non-accredited, shorter courses – which are declining in value from employers’ perspectives. The general consensus among respondents is that existing qualifications can, for the most part, be refined and expanded without the need to create a large suite of brand new qualifications.

In particular there is a need for more qualifications at Level 3, as Levels 1 and 2 are not always considered sufficient by employers.

Skills and knowledge scoring combined with industry stakeholder views suggest that the following aspects need to be addressed via development or enhancement of qualifications for the blue collar built environment workforce:

- Understanding the principles of heat loss;
- Understanding air quality, air tightness and ventilation requirements within buildings;
- Knowledge of the range of energy efficiency measures, and their suitability for different building fabrics and ages, including pre-1919 stock and hard to treat buildings;
- The so-called ‘hierarchy’ of energy efficiency measures, i.e. the sequence in which issues in buildings must be addressed in order to ensure maximum energy efficiency;
- Installation of ground and air source heat pumps;
- Installation of solar thermal and solar PV
- Installation of energy recovery, energy efficient cooling and shallow geothermal systems;
- Installation of biomass, combined heat and power and wind turbines.

In addition further specialist units in the following areas will be required to be added to existing qualifications in order to meet the 2020 targets:

- Energy consumption;
- The 2020 targets and what they mean for the building sector;
- Legislation relating to energy efficiency (as it continues to emerge) and what this means for the building sector;
- Quality assurance specifically in relation to energy efficiency materials, measures and procedures.

Some form of kitemark in energy efficiency would be welcomed by the sector.

Additionally, a number of stakeholders suggest that free courses or workshops on energy saving behaviours aimed at the general public would be beneficial, to help to stimulate

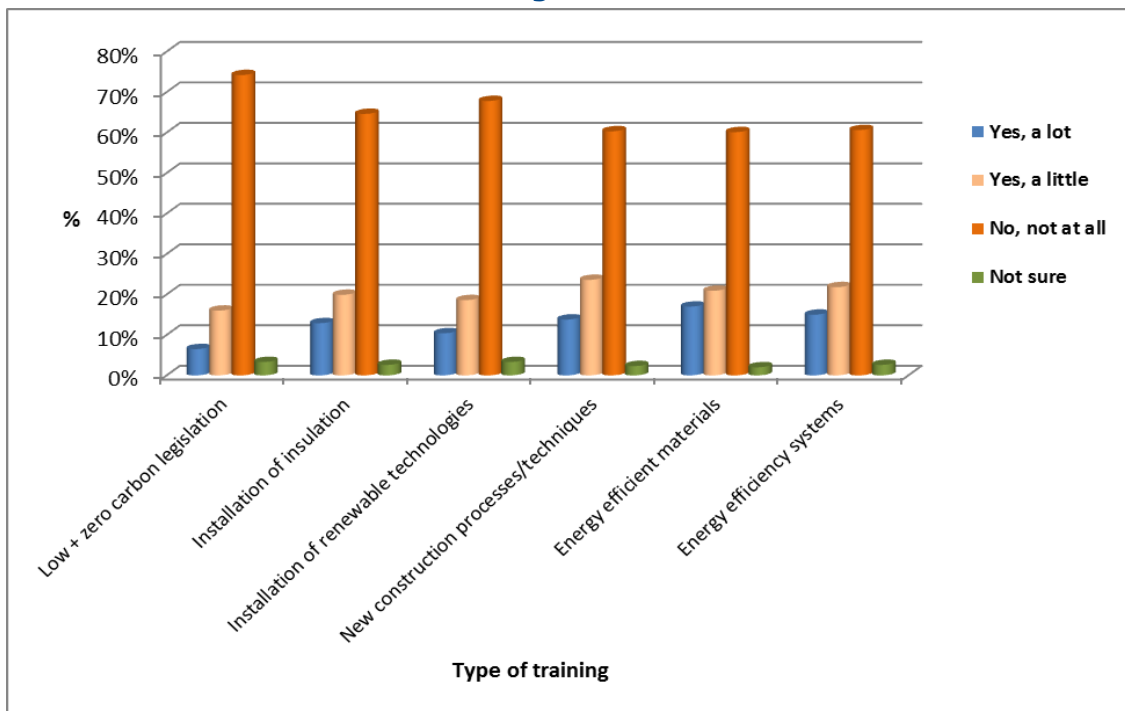


consumer demand for energy efficiency measures.

## 7.7 EXTENT TO WHICH TRAINING HAS ALREADY TAKEN PLACE IN THE BUILDING SECTOR

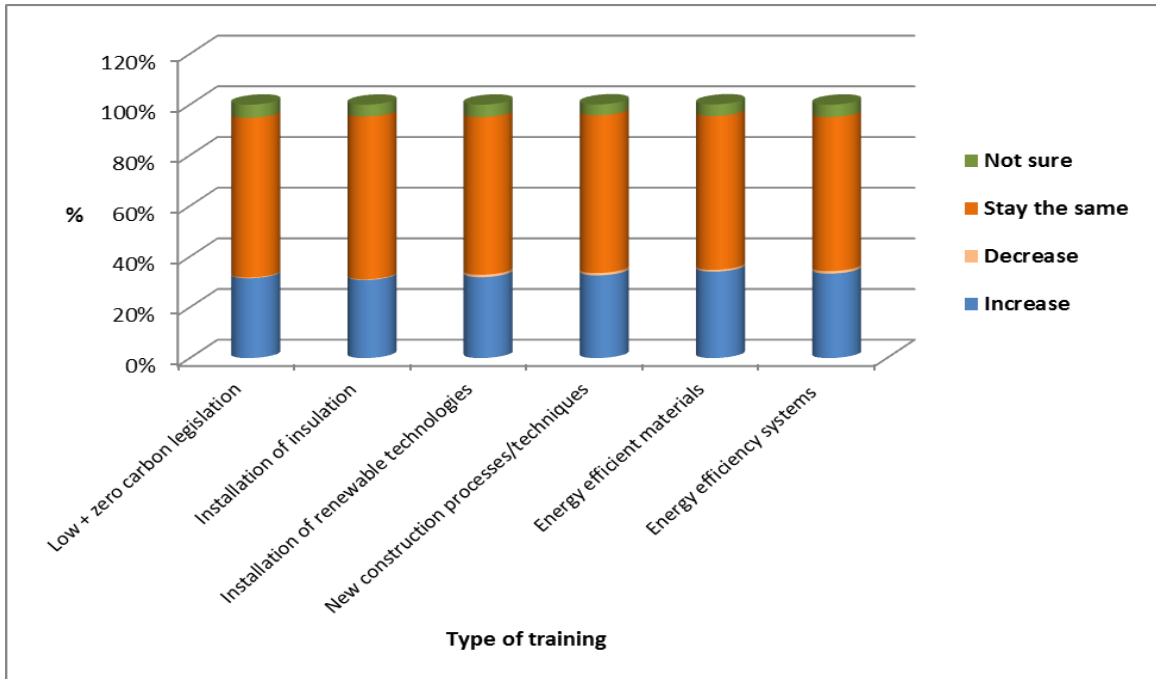
As Figure 12 shows, the majority of employers interviewed for this research have not yet provided their on-site workers with any training in relation to aspects of energy efficiency. This is clearly a concern particularly in light of planned activity as indicated in Figure 13, which shows that only around 30% of employers expect to increase relevant training provision.

**Figure 12: Extent to which training in energy efficiency has taken place among the blue collar workforce in the building sector**



Base 314 respondents

**Figure 13: Future<sup>298</sup> plans for training in energy efficiency among the blue collar workforce in the building sector**

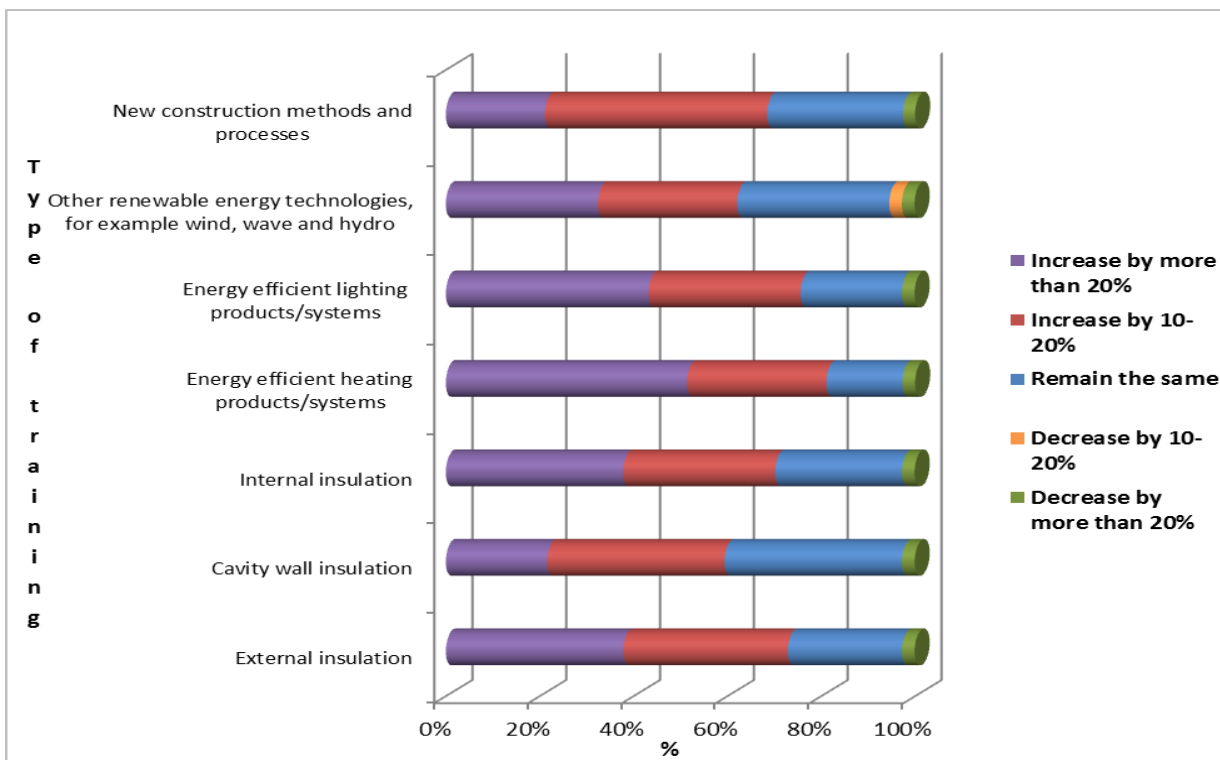


Base 314 respondents

<sup>298</sup> Over the next two years

However training providers interviewed for this research are anticipating that demand from employers for energy efficiency training is likely to increase over the next two years – although they acknowledge that current demand is low.

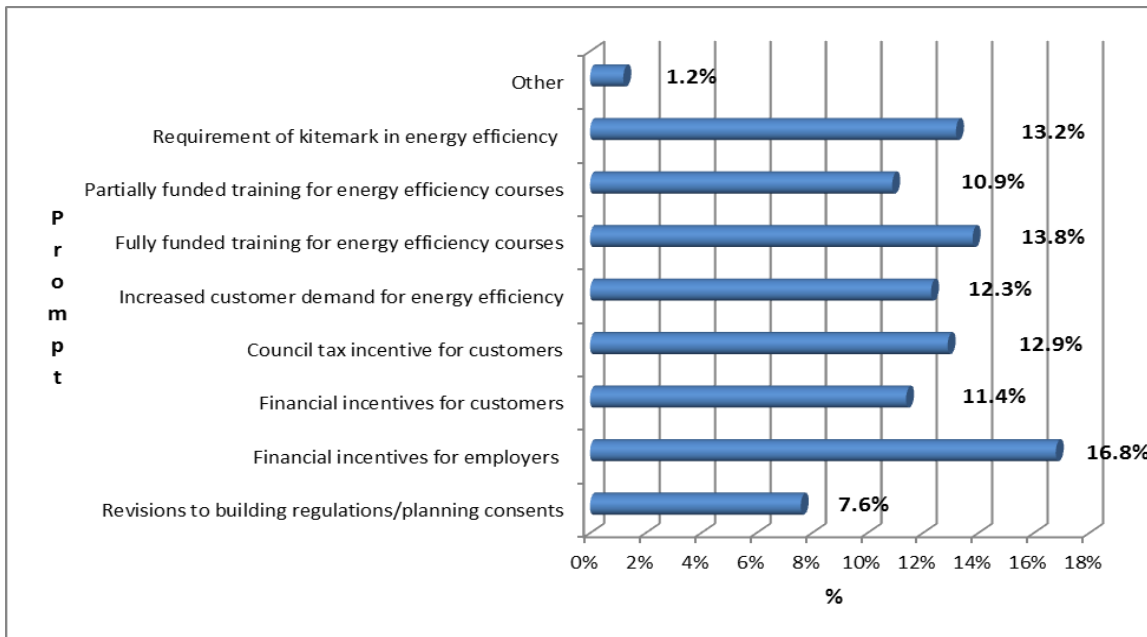
**Figure 14: Provider views on how employer demand for energy efficiency training will change over the next two years**



Base 41 respondents

Prompts that would be likely to encourage employers to invest in relevant training are outlined below in Figure 15. This shows that the highest proportion of employers interviewed for this research would want to receive some form of financial incentive in order to train their employees in energy efficiency measures.

**Figure 15: Prompts that would encourage employers to invest in energy efficiency training**

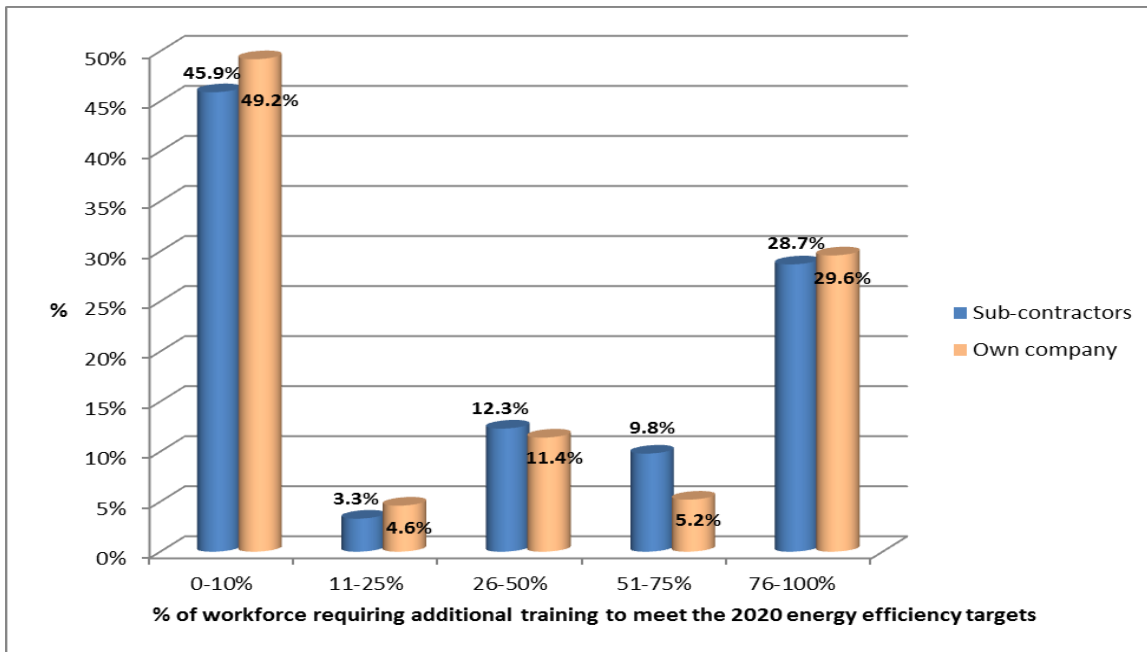


Base 314 respondents

### Number of workers requiring up-skilling to achieve the energy efficiency targets

Figure 16 below shows employer perspectives on the percentage of their permanent or sub-contracted workforce that will require additional training in order to achieve the 2020 targets. Nearly 50% of respondents consider that between 0 and 10% of their permanent workforce will need extra training to up-skill; however nearly 30% consider that between 76 and 100% of their workforce will need to be trained. The feedback shows that there is little difference between anticipated up-skilling needs for the permanent and sub-contracted workforces.

**Figure 16: Employer perspectives on the percentage of workers requiring additional training to meet the 2020 targets**

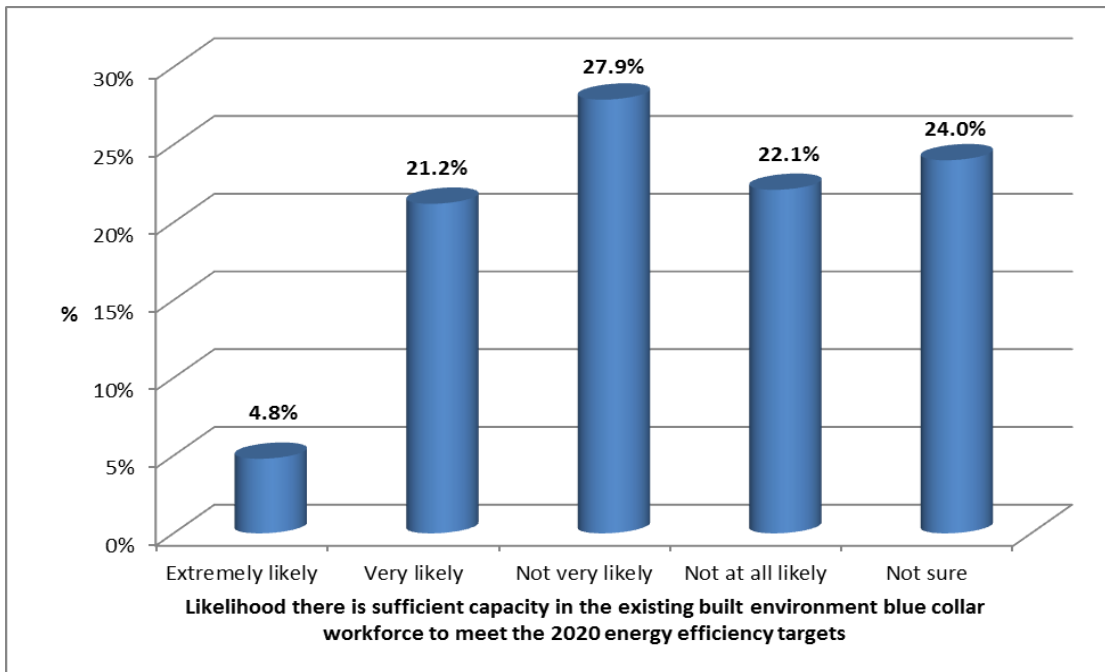


Base 314 respondents

## 7.8 CAPACITY IN THE EXISTING BLUE COLLAR WORKFORCE TO ACHIEVE THE 2020 ENERGY TARGETS

Just under 28% of employers interviewed for this research consider that it is not very likely there is sufficient capacity in the existing workforce to be able to meet the targets; a further 22% believe it is not at all likely. Just over a fifth of respondents believe it is very likely there is the capacity needed in the current workforce. Stakeholders in Scotland note that workers leaving the industry are not typically being replaced. Furthermore respondents in Scotland, Wales and Northern Ireland all point to concerns about limited capacity in the workforce in the more rural, hard to reach geographic regions.

**Figure 17: Employer views on the likelihood that there is sufficient capacity in the workforce to meet the 2020 targets**



Base 314 respondents

Calculating the capacity of the existing and future workforce to achieve 2020 energy targets is fraught with problems not least due to the difficulty in calculating, precisely, the skills and knowledge levels of existing operatives across a wide range of renewable and low-carbon areas.

The way in which we conducted this research does, however, give us a means of calculating the skill/knowledge capability of the existing workforce in a reasonably precise manner based on employer estimates of the capability of their workforces. Each new technology skill and knowledge area was scored by the employers and, we have extracted those which apply to each occupational area and cover the required 2020 techniques and knowledge - for example, solar PV, thermal solar, ground source heating, air source heating, wall and floor insulation, biomass heating, underfloor heating, general draught proofing, and so on. We allocated the most appropriate new technologies and knowledge areas to each occupational group in order to arrive at an average skills/knowledge score<sup>299</sup> specifically for 2020 skills and knowledge areas. These scores are given in the table below:

<sup>299</sup> It would be unreliable to try to drill down into more detail other than the overall average score

**Table 25: Average skill/knowledge levels among the existing blue collar built environment workforce in relation to energy efficiency**

Occupation	Average score for new technology skills and knowledge
Electricians and electrical fitters	7.1
Bricklayers and masons	6.9
Roofers, roof tilers and slaters	6.5
Plumbers and heating and ventilation engineers	5.8
Carpenters and joiners	7.2
Glaziers, window fabricators and fitters	5.7
Plasterers	7.4
Floorers and wall tilers	7.3
Painters and decorators	7.9
Scaffolders, staggers and riggers	8.2
Construction operatives	5.8
Steel erectors	8.4
Construction and building trades not elsewhere classified	5.6

In each case the score provides an indication of the capacity of the current workforce in each occupational group. Using the scores, however, requires a number of factors to be made clear.

1. The scores represent employers' views on the new-technology skills and knowledge of their existing workforce, not the proportions of the workforce which will require training in these skills in order to reach 2020 standards;
2. Our experience of skills and knowledge scoring over many different sectors and over the past ten years has demonstrated that the majority of employers regard a score of between 8 and 8.5 as being entirely satisfactory to meet industry needs. Consequently the difference between the score, above, and the "optimum skill/knowledge score" of 8.5 represents what we might term the "2020 Skills/Knowledge Deficit" for each occupational group. This is laid out below:

**Table 26: Estimated deficit in skills and knowledge for energy efficiency, by blue collar occupational group**

Occupation	Average score for new technology skills and knowledge	2020 Deficit
Electricians and electrical fitters	7.1	-1.4
Bricklayers and masons	6.9	-1.6
Roofers, roof tilers and slaters	6.5	-2.0
Plumbers and heating and ventilation engineers	5.8	-2.7
Carpenters and joiners	7.2	-1.3
Glaziers, window fabricators and fitters	5.7	-2.8
Plasterers	7.4	-1.1
Floorers and wall tilers	7.3	-1.2
Painters and decorators	7.9	-0.6
Scaffolders, staggers and riggers	8.2	-0.3
Construction operatives	5.8	-2.7
Steel erectors	8.4	-0.1
Construction and building trades not elsewhere classified	5.6	-2.9

In this table the greatest deficits can be taken to indicate the trades in greatest need of up-skilling to 2020 requirements as follows:

**Table 27: Blue collar occupational groups estimated to be in greatest need of up-skilling to meet 2020 energy efficiency targets**

Occupation	Average score for new technology skills and knowledge	2020 Deficit
Construction and building trades not elsewhere classified	5.6	-2.9
Glaziers, window fabricators and fitters	5.7	-2.8
Plumbers and heating and ventilation engineers	5.8	-2.7
Construction operatives	5.8	-2.7
Roofers, roof tilers and slaters	6.5	-2.0
Bricklayers and masons	6.9	-1.6
Electricians and electrical fitters	7.1	-1.4
Carpenters and joiners	7.2	-1.3
Floorers and wall tilers	7.3	-1.2
Plasterers	7.4	-1.1
Painters and decorators	7.9	-0.6
Scaffolders, staggers and riggers	8.2	-0.3
Steel erectors	8.4	-0.1



As these figures represent the average deficit for each occupational group it is possible to provide a rough, top-level estimate of the probable numbers requiring training towards 2020 standards. It must be recognised however that this is an extremely rough estimate based on no reliable knowledge of how long the deficit in each occupational group would take to remedy for each operative given the required changes in training courses, qualifications and provider capacity.

**Table 28: Estimated numbers in the blue collar workforce requiring training to help meet 2020 energy efficiency targets**

Occupation	Average score for new technology skills and knowledge	2020 Deficit	2012 Workforce	Estimate of training requirement 2012-2020
Construction and building trades not elsewhere classified	5.6	-2.9	227356	66000
Glaziers, window fabricators and fitters	5.7	-2.8	45270	12700
Plumbers and heating and ventilation engineers	5.8	-2.7	191140	52000
Construction operatives	5.8	-2.7	85510	23000
Roofers, roof tilers and slaters	6.5	-2.0	48258	10000
Bricklayers and masons	6.9	-1.6	12072	2000
Electricians and electrical fitters	7.1	-1.4	278662	39000
Carpenters and joiners	7.2	-1.3	218302	28000
Floorers and wall tilers	7.3	-1.2	41246	5000
Plasterers	7.4	-1.1	58348	6500
Painters and decorators	7.9	-0.6	118708	7200
Scaffolders, staggers and riggers	8.2	-0.3	31186	1000
Steel erectors	8.4	-0.1	12072	120

## 7.9 MONITORING NEEDS AND STRUCTURAL MEASURES

The UK Commission for Employment and Skills (UKCES) and the network of Sector Skills Councils (SSCs) are crucial to the on-going monitoring of sector-specific labour market trends, forecasts and their associated skills requirements. Their research programme aims to provide an extensive evidence base from which good practice, solutions and skills development can be driven. Pulling all of this together for the first time in 2010, UKCES is responsible for carrying out a National Skills Audit to identify areas of potential skills shortage and deficiencies at present and for the future<sup>300</sup>.

<sup>300</sup> <http://www.ukces.org.uk/ourwork/nssa>. The audit takes into account a large range of sector skills assessment reports from the SSC network, an LMI assessment which uses the Labour Force Survey, Employer Skills Survey for example as well as a horizon scanning and scenario development report produced by the St Andrews Management Institute (SAMI)

The 2010 report explains that it will be crucial to measure changing levels of supply and demand particularly with relation to construction projects, in order to identify any concentrations of demand for experienced staff because of a shortage of new industry recruits for example. Their 2011 evidence report, Working Futures examined labour market forecasts and projections, aiming to bring together a wide range of data sets and intelligence to underpin the development of policy concerning skills, careers and employment, which will also support the identification of skills mismatch and occupational gaps<sup>301</sup>.

For renewables, DECC intends to publish an annual Roadmap to present up to date evidence on renewables and progress towards meeting the 2020 targets for energy efficiency<sup>302</sup>. The Roadmap will cover consumption levels, impacts of policy activity, renewable energy deployment and changes to technology<sup>303</sup>.

As previously explained in Chapter 6, the SSCs in the UK hold responsibility for identifying skills gaps, driving investment into skills and the development of industry specific skills. Historically they have received public funding to fulfil this role, however since the impact of the recession, the core funding model has changed, and from April 2012, SSCs must seek contestable funding. A major concern among respondents to this research is that there will be insufficient funding and resources to produce accurate and regular labour market intelligence – which to date has monitored sector employment trends and skills needs. This will have a knock-on effect on qualifications development, as Awarding Organisations could struggle to produce qualifications that are fit for purpose if they lack a relevant evidence base.

In particular the devolved nations are at risk, as a number of nation managers within SSCs have been made redundant, and at present are unlikely to be replaced. Further funding cuts could put the entire SSC network at risk – with no clear strategy as to which organisations, if any, could take on their remit.

There are opportunities for employers to provide feedback on skills needs, gaps and mismatches via SSC forum discussions – however a number of respondents consider that smaller organisations cannot participate due to pressures of time and resources.

The Federation of Master Builders also has a role to gather opinions and feedback to CITB-ConstructionSkills but this can be challenging where employers do not respond. The organisation does not have the resources to follow up with all members.

It should be noted that this research, as part of the wider programme of work including the development of a 2020 Skills Roadmap, must not be overlooked when outlining the current

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<sup>301</sup> <http://www.ukces.org.uk/ourwork/working-futures>

<sup>302</sup> DECC (2011), *UK Renewable Energy Roadmap*

<sup>303</sup> Ibid

monitoring measures within the relevant sectors. This analysis of the National Status Quo for the important sectors of Construction, Built Environment and Renewable Energy identifies the skills gaps and workforce requirements across the UK, drawing on both secondary literature and primary research with employers and providers. The forthcoming 2020 Skills Roadmap will inform the future development of skills across the UK in the lead up to 2020. Covering specific qualification as well as training needs not just for the existing workforce but for the future workforce, the 2020 Roadmap will lead future skills development in the sectors.

## Chapter 8: Barriers

Respondents to this research have identified a number of barriers in relation to meeting the 2020 energy targets, and these can be summarised into the following themes:

- Fragmented policy and lack of coherent UK strategy in relation to green skills;
- Low levels of employer and consumer awareness;
- Funding cuts and constraints;
- Capacity in the existing workforce;
- Skills and knowledge gaps; and
- Gaps and issues in relation to training provision.

Each of these is discussed in more detail in the following sections.

### 8.1 POLICY AND STRATEGY

#### Fragmentation

Respondents to this research and existing literature clearly points to a fragmented approach from the UK Governments in relation to the energy efficiency agenda. Whilst there are numerous 'pockets' of activity resulting in a range of different strategies and policy documents<sup>304</sup>, there is limited information for employers as to specifics. Businesses, training providers and Awarding Organisations need clear guidance on the types of skills and training that will be necessary, but currently there are many gaps within the information that is available. The UK lacks a coherent green skills strategy (although more progress has been made in this regard within Wales and Scotland).

#### Lack of confidence

Furthermore a number of policy revisions in recent years have undermined the UK Government's stance on energy efficiency. Confidence in the built environment sector has been dented following a number of 'U-turns' – notably in relation to the change to the Feed-In Tariffs, with a decrease in the subsidy. The workforce that invested in training for the short-lived Home Information Pack (HIP) scheme<sup>305</sup> gained no return or benefit, and consequently there is a certain amount of wariness among employers to invest in training in case future initiatives are also withdrawn.

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<sup>304</sup> Not always within the same Government department, however – responsibilities are also somewhat disjointed. The Renewable Energy Association has recently called for not only a clearer policy framework/leadership in relation to the renewable energy targets, but also the appointment of a renewable energy minister within BIS

<sup>305</sup> The HIP scheme was not introduced in Scotland

*"If the UK Government cuts subsidies as with the Feed-In Tariff then people will go through a costly and very disheartening experience"*

**National Housing Federation**

### Limited information

Common throughout the majority of existing research on the subject of the low carbon economy, and its sub sectors, continues to be an inherent lack of knowledge on the particular requirements and how to quantify them. Identifying precisely where and how much up-skilling will be required for example in roles that just need to be 'adapted' is very much dependent on employers being aware of what will be required and taking action to do so. This will require much more work with employers to ensure they have access to the right support and advice to be able to make the right training decisions.

### Perceived lack of urgency

Industry stakeholders consider that the UK Government can be too slow to react to the energy efficiency agenda – with the Green Deal being a notable example. Due for launch in autumn 2012, the sector still awaits the outcome of DECC's Green Deal consultation which closed in January of this year. Anecdotal evidence within the industry and the UK Government's on-going clampdown on advertising spend is suggesting that there will be a soft launch of Green Deal which is a concern among employers as this is unlikely to stimulate consumer demand.

*"Employers are on a cliff edge with little information and no confidence in the system, they think it will all change again at some point in the future"*

*"We are as ready as we can be but lack of pace from Government and decision makers is exasperating"*

*"The lack of clarity is stopping everyone. Employers will not invest (in training) until they know what is happening, colleges will not invest until they know what is happening – businesses that employ apprentices are not going to invest either"*

**Employer and stakeholder feedback**

### SMEs

Time taken between initial investment, training, staff competence and then increased return can be great so more certainty from all UK Governments would help to overcome this<sup>306</sup>. It is clear that SMEs face much greater barriers to invest in skills than larger

<sup>306</sup> HM Government (2011), *Skills for a Green Economy*

employers and therefore this time lag and need for reassurance from all UK Governments is argued to be of much greater significance for SMEs.

### Perception of increased 'red tape'

A number of employers state that they would not be interested in the energy efficiency agenda because they believe it will be highly bureaucratic. The design of Scotland's low carbon fund training is a good example – small companies had to pay for training in full before claiming back 50% of the costs. This approach was counter-productive as many organisations considered this a major obstacle, and therefore did not take up the opportunity.

## 8.2 AWARENESS OF THE ENERGY EFFICIENCY AGENDA

### Industry awareness

Limitations in relation to a joined up policy as previously discussed have also contributed to low levels of awareness in relation to the 2020 targets – particularly among SMEs which comprise the bulk of the built environment sector. Stakeholders consider that small businesses do not fully understand the scale of either the challenge, or the potential opportunities as a result of the energy efficiency agenda.

Of the 314 employers interviewed for this research, just over 47% are aware of the 2020 targets. Of that proportion, just over 30% had heard of the targets but do not possess detailed knowledge and understanding of them. Just over a quarter are fully aware of both EU and UK energy efficiency targets. Less than a quarter of training providers interviewed are aware of the targets.

### Consumer awareness

Limited consumer awareness results in a lack of demand for energy efficiency measures – that would in turn stimulate the market and thus the need for training to up-skill the blue collar workforce. Even for initiatives that have been quoted fairly frequently in the press such as the Green Deal, recent research<sup>307</sup> suggests that there is still a barrier in the form of consumer demand.

Industry stakeholders and employers consider that in householders' minds – there is a question mark as to what the actual benefits are. Consumers are typically more interested in cost savings than energy savings – but the actual cost of installing the measures at the outset impedes investment. A number of employers including SMEs state that energy efficient materials are expensive and can be cost prohibitive for many households. Furthermore not all measures are aesthetically acceptable to consumers – particularly when they live in older properties such as stone cottages. Coupled with the

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<sup>307</sup> CITB-ConstructionSkills (2012), *Research to support the development of a Green Deal Competency Framework*

impact of the economic downturn and reduced consumer spending generally, it can be very difficult to “get customers to spend money on technology they may never see the benefit of. Sceptism is the greatest barrier”<sup>308</sup>.

### SMEs – focus on the short-term

Many stakeholders across all nations believe that it is very difficult for employers to “look any further than next week” – the focus for the industry and for SMEs in particular, is on survival. One barrier is that 2020 still seems like a very long time away, and this is exacerbated by the seemingly limited levels of consumer demand. There is, for the most part, a reluctance to invest in training (compounded by other factors already cited notably lack of confidence in the energy efficiency agenda and concerns over UK Government ‘U-turns’).

### Lack of comprehensive information about training

The findings suggest that either improved dissemination of information within the industry is required to increase knowledge and awareness of training and funded training programmes, or improved standards of learning and training in general which can be accessed by sub-contractors and small businesses. Previous research has found, for example, that training for construction SME’s could be a critical success factor for many Government policies for sustainable energy management and the built environment<sup>309</sup>. Currently it is difficult to access information about what kind of training will be necessary among the blue collar workforce. As previously stated, SSC websites do not publish comprehensive lists of relevant training and providers.

### Likelihood of meeting the 2020 targets

Respondents were asked to give a view on the likelihood that the UK will meet the energy efficiency targets (based on the status quo in terms of skills, knowledge and general capacity within the blue collar workforce).

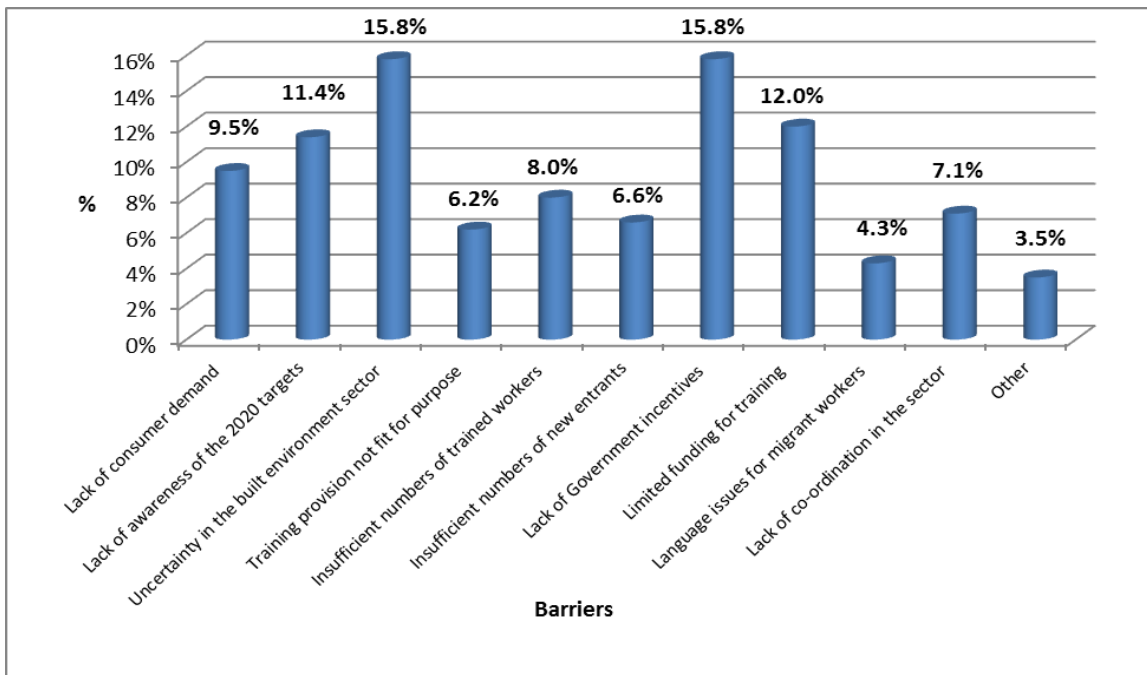
Just over 32% of employers surveyed consider it is not very likely the UK will meet the targets, and 25% of employers believe it is not at all likely. Less than a fifth (17.5%) of employers consider it is very likely the UK can achieve the targets.

Figure 18 below shows a summary of the barriers cited by employers as reasons for their response. This indicates that the highest proportion of employers view uncertainty in the sector and lack of incentives from the UK Governments to be significant barriers.

<sup>308</sup> Industry stakeholder views

<sup>309</sup> Foresight Group (2008), *Powering Our Lives: Sustainable Energy Management and the Built Environment*

**Figure 18: Barriers faced by the UK in relation to meeting the 2020 energy efficiency targets (employer perspectives)**



Base 314 respondents

Stakeholders in Wales in particular agree it will be very difficult to achieve the objectives. For example statistics quoted by focus group participants<sup>310</sup> suggest a need to upgrade over 60,000 properties in Wales every year, at a cost of over £6 billion.

*"Targets will not be met, unless there is a significant improvement in incentives, complemented by more rigorous regulatory requirements"*

**Regeneration Skills Collective**

### 8.3 FUNDING

Funding constraints – largely as a result of the recession – mean that there is, at present, limited monies with which to offer publicly funded grants and incentives to businesses and/or consumers. Furthermore there is a risk in relation to the current SSC function, notably whether they will be able to retain their full remit in relation to National Occupational Standard (NOS) development to inform qualifications, and the production of sectoral labour market intelligence. The reduction or removal of these functions

<sup>310</sup> Originally sourced from BRE



would put the building sector under severe pressure, as effectively there would not be a system to identify and respond to skills gaps/mismatches currently or for the future.

Another barrier is that even where incentives/schemes are on offer, they typically have a short lifespan as the pot of funding is limited. Some stakeholders believe that this creates a “feast and famine” culture, as UK Governments can offer too much at the outset which is then withdrawn before businesses have had a chance to firmly embed changes and make them sustainable.

#### **8.4 CAPACITY IN THE EXISTING BLUE COLLAR WORKFORCE**

As well as barriers relating to skills and knowledge/training needs, respondents suggest a need for concern about the ageing workforce in the building sector – notably because anecdotal evidence suggests there are lower numbers of new entrants joining the industry. Furthermore trainees may face delays in receiving training, as many employers at the present time lack money and resources to support up-skilling. The majority of stakeholders have suggested that the workforce is unlikely to be ready for the Green Deal.

A worrying trend which will also no doubt influence the provision of training is the way in which Apprenticeships are offered by employers. Since 2009 there has been a shift in the balance between numbers being offered to new recruits as opposed to existing staff with over 50% of Apprenticeships now being offered only to new recruits, especially in small businesses<sup>311</sup>. If, as research suggests, there is a distinct need to up skill in order to develop skills to meet the targets of 2020 and the majority of the 2020 workforce is already working in the industry, this trend is of particular concern.

##### **Barriers to building capacity**

Employer reluctance to invest in training is the most significant barrier in relation to capacity building. As many employers do not understand (or believe) how the energy efficiency agenda could benefit them directly, they are most likely to acquire training if there was a legislative requirement to do so. Stakeholders consider this issue to be predominantly about SMEs rather than bigger companies – but as already stated it is SMEs that comprise the majority of the sector.

*“This (up-skilling for energy efficiency) will move forward at two speeds – larger companies that can resource, gear up and have the back office infrastructure do not need help – however smaller companies definitely do”*

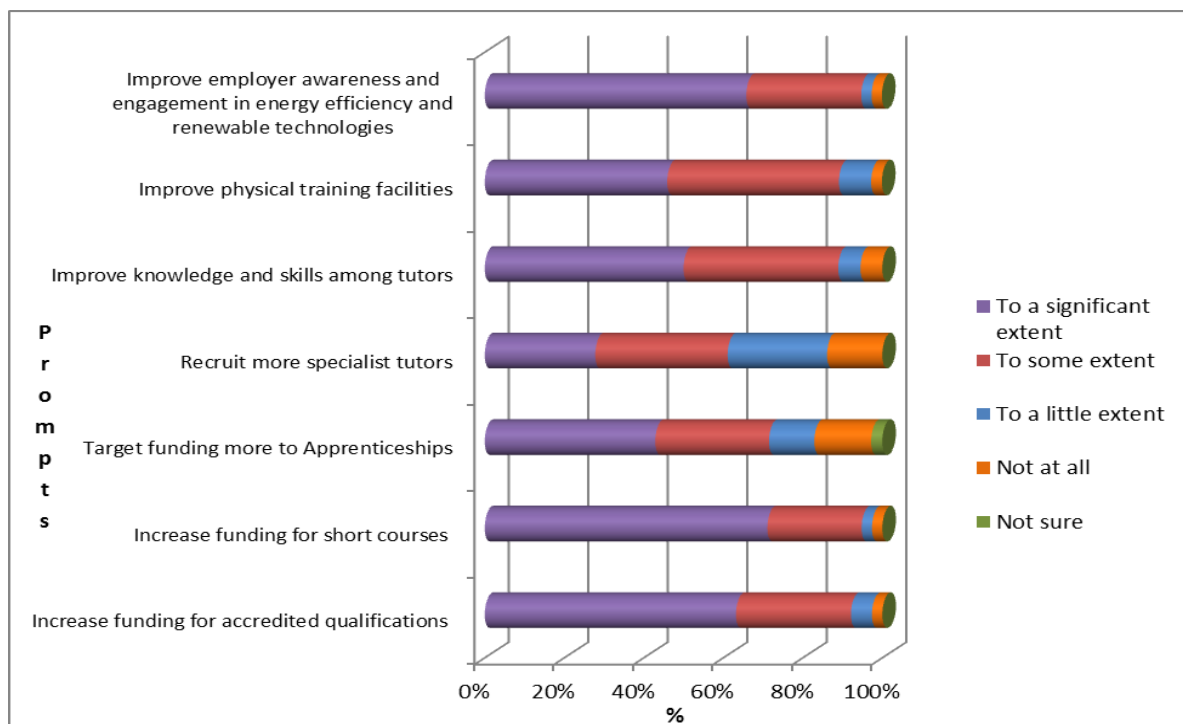
**Stakeholder comment**

<sup>311</sup> COBRA (2010), *Skills Development of Employees at SMEs in the Construction Sector in the North of England*

In recent research employers and training providers identified training costs and limited public funding as the biggest barriers to them accessing training<sup>312</sup>. A lack of resources to firstly fund training, but also to employ replacement staff for the duration is also a significant barrier faced by smaller businesses, especially in the difficult economic climate<sup>313</sup>. Nearly a third of employers interviewed for this research stated that the biggest barrier to investing in training is that it is cost and time prohibitive. This relates not just to initial training, but also the costs of maintaining skills via regular CPD.

Figure 19 below shows that providers interviewed for this research believe that the availability of funding and better awareness of the energy efficiency agenda (and what it means for them) would be most likely to persuade them to invest in training.

**Figure 19: Provider views on prompts that would encourage investment into energy efficiency training**



Base 41 respondents

<sup>312</sup> ConstructionSkills (2012), *Research to support the development of a Green Deal Competency Framework*

<sup>313</sup> COBRA (2010), *Skills Development of Employees at SMEs in the Construction Sector in the North of England*

## 8.5 SKILLS AND KNOWLEDGE GAPS

Chapter 7 outlines in detail the skills and knowledge needs for the blue collar workforce in relation to this agenda, and clearly highlights substantial knowledge gaps, notably in relation to understanding of different building fabrics, ages and how energy efficiency measures could have an impact. Gaps are prevalent within heritage skills and knowledge, a concern given the UK's need for a major retrofit programme.

### Leadership and Management

Research suggests improvements are needed in the leadership and management skills of employers both to identify training needs, but also more specifically, to increase their awareness of what meeting the 2020 targets means for them. This is by no means a recent finding however, as from the Leitch Review of skills in 2006, to the Low Carbon Industrial Strategy in 2009, leadership and management skills have been consistently identified as a pan-sector skills requirement for the low carbon economy.

### Migrant labour

Migrant labour is extremely prevalent throughout the sub-sectors of the built environment sector and most certainly supports the sector in filling temporary labour force shortages and skills gaps. However, the transient nature of this group and their varied origins will also undoubtedly present some barriers to skills development in preparing to meet 2020 targets. Language difficulties and also health and safety issues have been identified as particular problems with this labour market group<sup>314</sup>. In summary however, it is the trend for skills shortages to be filled by workers from overseas which will impact the most on skills development as subsequently, the UK workforce is not being up-skilled to meet requirements<sup>315</sup>.

While migrant labour can most certainly support short-term shortages, the transiency of the group may serve to negatively impact on future skills development or shortages. For example, migrant workers may choose to return to their own countries or move elsewhere where more attractive employment opportunities exist<sup>316</sup>. Migration and migrant labour have also been identified as having the potential to mask where skills mismatches are likely to occur, or are occurring, between skills demand and the supply within the domestic workforce<sup>317</sup>.

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<sup>314</sup> SummitSkills (2010), *Sector Skills Assessment Report: Building Services Engineering Sector UK*

<sup>315</sup> HM Government (2010), *Low Carbon Construction Innovation and Growth Team*

[http://www.ccinw.com/uploads/documents/sustainable\\_construction/key\\_documents/low\\_carbon\\_construction.pdf](http://www.ccinw.com/uploads/documents/sustainable_construction/key_documents/low_carbon_construction.pdf)

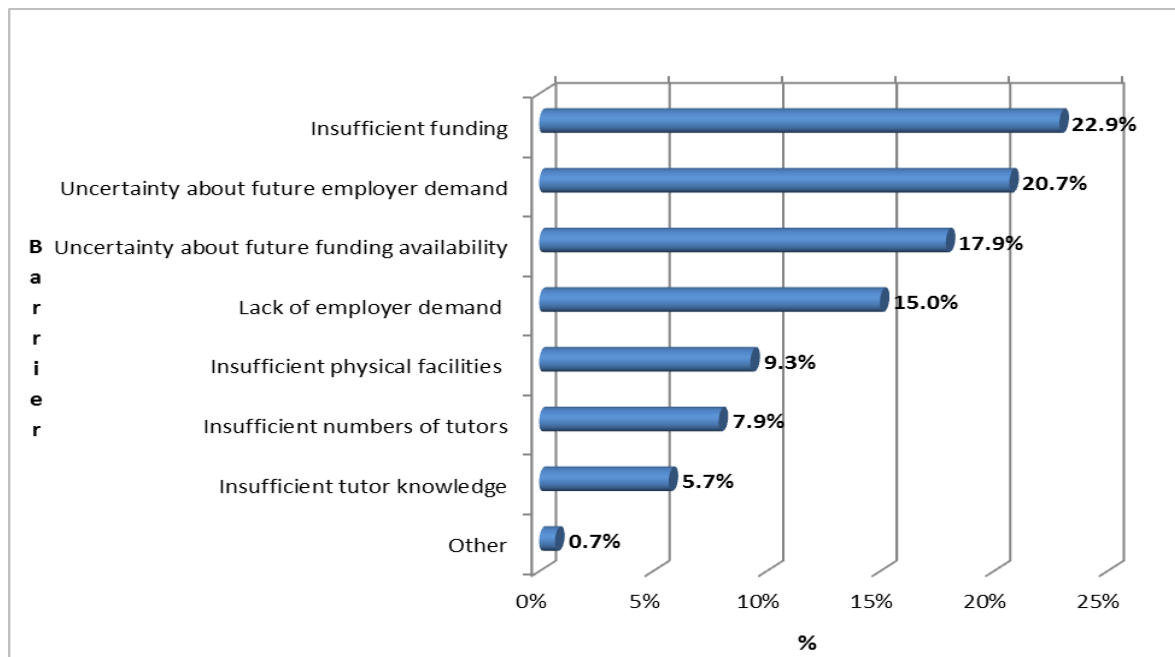
<sup>316</sup> Ibid

<sup>317</sup> UKCES (2010), *Skills for Jobs: Today and Tomorrow: The National Strategic Skills Audit for England 2010*

## 8.6 ISSUES RELATING TO TRAINING PROVISION

Over 90% of training providers interviewed for this research consider that there are barriers in the way of developing relevant provision. A large proportion had in fact withdrawn energy efficiency courses due to lack of uptake, which is resulting in gaps – particularly in rural areas. A number of employers stated that their local training provider had closed down, making provision difficult to access. Figure 20 below indicates that funding and the level of demand are the most significant barriers to the development of new provision.

**Figure 20: Provider views on the barriers faced when seeking to develop new training provision for the energy efficiency agenda**



Base 41 respondents

Although the low carbon 'sector' is still immature, it is a fast-moving industry with many new technologies in development or at pilot stage. This frequently means that training provision can trail behind, and does not always fully reflect what industry requires now. Providers and a number of stakeholders note that the process of developing qualifications can be protracted, reliant as it is on a range of partner organisations working together.

## Chapter 9: Conclusions

This National Status Quo research into skills, knowledge and training within the blue collar<sup>318</sup> built environment workforce indicates that there are a number of skills and knowledge gaps likely to impede the UK's capacity to meet the 2020 energy efficiency targets. Furthermore the supply of training provision is severely limited in relation to emerging technologies, with pockets of specialist courses only, and limited demand preventing more widespread development of training.

Barriers including restricted funding for training, low levels of industry and consumer awareness/understanding of the energy efficiency agenda and fragmented policy frameworks at strategic levels suggest an urgent need for change. If this is not addressed quickly the sector risks not only failing to achieve the targets, but also failing to capitalise on the potential opportunities for employment and economic growth in the UK.

It is likely that progress towards the EU 2020 energy targets could move forward at different paces within the different UK nations. Governments in each of the four nations have varied responsibilities and strategies/policy stances relating to education, training and skills, funding and the energy efficiency agenda as a whole (as well as specifically its link to up-skilling and job creation). For example the Scottish Government appears to be making more rapid progress in relation to the development and implementation of its range of 'green' strategies.

### 9.1 RECOMMENDATIONS

#### Policy and strategy

- Governments in all nations should, as a matter of urgency, develop a coherent green skills and jobs strategy that should take into consideration existing research that points to the numbers of workers that require training, likely means to bring about investment into training, the priority skills and knowledge gaps that need to be filled, and how this will be addressed. Where similar strategies already exist (for example in Scotland<sup>319</sup>), it is vital that actions are closely monitored and any issues in relation to meeting actions addressed promptly. It is

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<sup>318</sup> Typically referring to workers that are based on some form of site and carry out physical or manual work – for example bricklayers, plasterers, roofers etc.

<sup>319</sup> In addition to its Energy Efficiency Action Plan the Scottish Government has established a Scottish Energy Advisory Board bringing together Ministers and industry stakeholders

vital that existing and planned initiatives are incorporated where possible – for example schemes like Jobs Growth Wales, the UK Youth Contract, Scotland’s Low Carbon Skills Fund/Flexible Training Opportunities and Northern Ireland’s Success through Skills Strategy - that could offer green skills to potential new entrants for the built environment sector.

- It is crucial that Government policies for the energy efficiency agenda in all UK nations are maintained to give the industry reassurance they are committed to driving this forward. Only by adopting a clear stance will the sector begin to regain confidence in the agenda.
- Promotion of Apprenticeships and training in the sector should include a focus on the impact that the low carbon, energy efficiency or so-called ‘green’ agenda is beginning to have on existing job roles. This would be a means of raising the profile and benefits of Apprenticeships and help to attract new entrants into the sector – vital given the expectation that lower numbers of new entrants will be coming into the sector over the next few years. The risk is that there will be insufficient capacity in the built environment workforce – should demand increase among consumers for energy efficiency measures.
- The UK Government should consider revisions to the building regulations that will act as a strong catalyst for change – for example solar PV could be mandatory for new builds - where appropriate. In particular there is a need to maximise energy efficiency requirements for non-domestic buildings which account for a substantial amount of current emissions. Furthermore Part L of the building regulations should seek to regulate embodied carbon, which assumes a higher proportion of the carbon output of a building. A consultation in relation to the revision of UK Building Regulations consultation exercise closed in April 2012<sup>320</sup>, and the outcome is currently awaited. It will be vital that the UK Government not only pays close attention to industry responses to the consultation, but responds quickly to embed required changes.
- The Northern Ireland Executive should also seek to embed revisions to its building regulations as a matter of urgency; unlike the other UK nations the Northern Ireland regulations have not been recently updated and there is a need to address the energy efficiency agenda within subsequent iterations.

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<sup>320</sup> Including proposals to update Part L in relation to tighter carbon dioxide emission standards for new homes and non-domestic buildings; to take the next step towards 'zero carbon' standards; tighter performance standards for works to existing buildings; requirements for additional energy efficiency improvements to be carried out when other specified works are planned and Green Deal finance is available as an option to meet the up-front costs

- A potential catalyst for the Green Deal would be for providers to work closely with Local Authorities, Housing Associations and social landlords (that between them own a large proportion of domestic housing stock). Key stakeholders such as the National Housing Federation would be in a position to advise on likely levels of demand for the scheme. The Scottish Government is already exploring the potential for a retrofit programme with Registered Social Landlords.
- Research strongly suggests a need to provide employers and consumers with funding and/or incentives. For SMEs it appears that training will not happen unless public funding is provided, whilst stakeholders believe that schemes such as the Green Deal will have to be promoted via offers such as council tax or VAT reductions. However individual UK nations fund training in different ways – so it is unlikely that there will be one core UK-wide funding strategy in relation to this. Allied to this is the need to raise consumer awareness of the energy efficiency agenda to support behavioural changes and stimulate demand<sup>321</sup>. This in turn will enable low carbon materials and processes to become cheaper over time.
- Gaps in data (as outlined in Chapter 5) should be addressed so that responsible authorities can monitor progress against targets more effectively.

### Recommendations for Sector Skills Councils

- There is an urgent need to raise awareness of the energy efficiency agenda, the targets and what this can mean for businesses – within the built environment sector. Employers, training providers and Awarding Organisations all require clearer guidance on skills and training needs for now and in the future. SSCs can play a critical role in relation to information sharing – particularly in relation to training. SSCs in the building sector should provide comprehensive information on the supply of necessary training via as many communication channels as possible. Information should include details on how to access funding where available and SSCs should continue to seek to harness public pots of funding like the Employer Investment Fund for the development of green skills and training provision.
- There is clearly a need to broaden the scope for the 2020 Skills Roadmap. The professional workforce as well as energy assessors and advisors need up-skilling and training to support achievement of the targets – the blue collar workforce should not be considered in isolation.

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<sup>321</sup> It should be noted that the Scottish Government has committed to a marketing campaign to raise awareness about energy efficiency

- SSCs need to work closely with employers, providers and Awarding Organisations to streamline and accelerate the process of qualifications development, and ensure training meets industry needs.

### Training and qualifications

- Priority needs for skills and knowledge among the blue collar workforce can only be addressed if there is sufficient relevant training available. To harness the opportunity offered by the EU 2020 targets, skills and knowledge needs that must be **urgently** addressed through appropriate provision span:
  - Understanding the principles of heat loss;
  - Understanding air quality, air tightness and ventilation requirements within buildings;
  - Knowledge of the range of energy efficiency measures, and their suitability for different building fabrics and ages, including pre-1919 stock and hard to treat buildings;
  - The so-called 'hierarchy' of energy efficiency measures, i.e. the sequence in which issues in buildings must be addressed in order to ensure maximum energy efficiency;
  - Installation of ground and air source heat pumps;
  - Installation of solar thermal and solar PV
  - Installation of energy recovery, energy efficient cooling and shallow geothermal systems;
  - Installation of biomass, combined heat and power and wind turbines.
- The table below presents an estimate of the likely numbers within the workforce that will require training and up-skilling to help achieve the 2020 energy efficiency targets – based upon current average skills and knowledge levels (as estimated by employers surveyed for this research).



**Table 29: Estimated numbers to be trained to help meet the 2020 energy efficiency targets among the blue collar built environment workforce**

Occupation	Average score for new technology skills and knowledge	Estimate of training requirement 2012-2020
Construction and building trades not elsewhere classified	5.6	66000
Glaziers, window fabricators and fitters	5.7	12700
Plumbers and heating and ventilation engineers	5.8	52000
Construction operatives	5.8	23000
Roofers, roof tilers and slaters	6.5	10000
Bricklayers and masons	6.9	2000
Electricians and electrical fitters	7.1	39000
Carpenters and joiners	7.2	28000
Floorers and wall tilers	7.3	5000
Plasterers	7.4	6500
Painters and decorators	7.9	7200
Scaffolders, staggers and riggers	8.2	1000
Steel erectors	8.4	120

- Training provision needs to be offered in a more flexible manner that will better suit the needs of industry<sup>322</sup>. In particular a transitional training model with a 'menu' of skills plus options for 'bolt-on' units and modules is an urgent requirement that is most likely to help the workforce up-skill quickly, easily and in a cost effective manner. This is reliant on widely promoted and effective channels of communication so that employers are aware of a) what training they require and b) how to find and fund it. Furthermore this provision must include a significant focus on practical skills.
- There is a requirement for greater Level 3 provision, as employers are increasingly starting to seek out qualifications at this level rather than Levels 1 and 2. Additionally the value attached to short, non-accredited training is diminishing, and there is a need to ensure a wider suite of accredited provision that is based upon National Occupational Standards (NOS).
- There will be a need for much more 'train the trainer' provision to up-skill the number of new trainers required for the sector, as well as Continuing Professional Development (CPD) to enable tutors to remain up-to-date with industry demands

<sup>322</sup> In Scotland Flexible Training is already seeking to address this

in relation to energy efficiency.

- The sustainability/energy efficiency agenda should also be taught in schools<sup>323</sup>, with general awareness embedded in other sector qualifications – crucial as every occupation is likely to contain an element of sustainability and energy efficiency awareness.

### Recommendations for employers

- Employers and SMEs in particular should take some responsibility for seeking information about the energy efficiency agenda – in particular relevant legislation and policy, and how this should be interpreted. Trade associations would potentially be in a position to influence and/or support employers in relation to this.
- Employers should also seek to build closer relationships with energy suppliers to ascertain which types of energy efficiency systems will be marketed to consumers – this will dictate the type of training and qualifications that are required among the workforce.

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<sup>323</sup> It should be noted that in Scotland sustainability is part of its Curriculum for Excellence and 98% of all Scottish Schools (100% of secondary) have signed up to the Scottish Eco-Schools Programme

## Chapter 10: Authors/Contributors

The author of this report is Pye Tait Consulting, working on behalf of Build Up Skills UK: Asset Skills, CITB-ConstructionSkills, EU Skills and SummitSkills.

## Chapter 11: References

### 11.1 BIBLIOGRAPHY

Aldersgate Group (2012), *Building Britain: The Path to Sustainable Growth for the Built Environment*

Article 4 of the Renewable Energy Directive 2009/28/EC

Bird, L. and Lawton, K. (2009), *The Future's Green Jobs and the UK Low Carbon Transition*

BIS Innovation and Growth Team (IGT) (2010), *Low Carbon Construction – Final Report*

BIS IGT (2010), *Estimating the Amount of CO<sup>2</sup> Emissions that the Construction Industry can Influence*

BIS IGT (2010), *Emerging Findings*

BIS (2011), *The Specification of Apprenticeship Standards for England*

BIS (2011), *Enabling the Transition to a Green Economy*

BIS & the Department for Energy and Climate Change (DECC) (2010), *Meeting the Low Carbon Skills Challenge: A Consultation on Equipping People with the Skills to take Advantage of Opportunities in the Low Carbon and Resource Efficient Economy*

BIS (2010), *Skills for Sustainable Growth*

BIS (2010), *New Industry New Jobs*

BIS (2009), *Towards a Low Carbon Economy*

Building (2012), *Market Forecast*

Building (Scotland) Act 2003

Business in the Community (2010), *Leadership Skills for a Sustainable Economy*

Business Technology Forum (2010), *Supply Chain Management for the Construction Industry*

CAGE (2010), *Labour Markets in the Interwar Period and Economic Recovery in the UK and the USA*

Charles Hendry (Minister of State for Energy and Climate Change) (24 April 2012), *Speech at Smart Grids GB*

Centre for Low Carbon Futures (2011), *The Retrofit Challenge – Delivering Low Carbon Buildings*

CITB-Construction Skills (2010), *Sector Skills Assessments (UK-wide)*

CITB-ConstructionSkills (2012), *Research to Support the Development of a Green Deal Competency Framework*

CITB-ConstructionSkills (2011), *Training and Skills in the Construction Sector*

CITB-ConstructionSkills, *Strategic Plan 2011-2015*

CITB-ConstructionSkills; Energy and Utility Skills and SummitSkills' *Occupational and*

*Functional Maps*

CITB-ConstructionSkills Northern Ireland (2008, updated 2010), *Sector Skills Agreement for the Construction Industry in Northern Ireland*

CITB-ConstructionSkills (2010), *Understanding Future Change*

Climate Change Act 2008

Climate Group (2008), *SMART 2020: Enabling the Low Carbon Economy in the Information Age*

COBRA (2010), *Skills Development of Employees at SMEs in the Construction Sector in the North of England*

Committee for Climate Change (20 December 2011), *Open Letter from Adair Turner, Chair of the Committee to Chris Huhne, Secretary of State, DECC*

Commons Library Standard Note (1 May 2012), *Output and Employment by Industry*

Constructing Excellence (2004), *Supply Chain Management*

Construction index.co.uk (2010), *Regional Construction Forecast Data: The Big Picture*

ConstructionSkills Network (2011), *2011-2015 Blueprint for the UK*

Construction Skills Network (2005), *Blueprint for UK Construction Skills, 2012-2016*

Datamonitor (2011), *Wind Energy in the UK*

Datamonitor (2011), *Renewable Energy in the UK*

Datamonitor (2011), *Home Building in the UK*

Department for Energy and Climate Change (DECC) (2012), *Consultation on Proposed Changes to the Government's Standard Assessment Procedure (SAP)*

DECC (2012), *The Future of Heating: A Strategic Framework for Low Carbon Heat*

DECC (2012), *UK Bioenergy Strategy*

DECC (2011), *Carbon Management Plan*

DECC (2011), *National Policy Statements for Energy*

DECC (2011), *Annual Energy Statement*

DECC (2011), *What Measures does the Green Deal Cover?*

DECC (2011), *UK Renewable Energy Roadmap*

DECC (2011), *The Green Deal and Energy Company Obligation Consultation Document*

DECC (2011), *The Green Deal and Energy Company Obligation Consultation Impact Assessment*

DECC (2011), *Updates to the Feed-In Tariffs Model submitted by Cambridge Economic Policy Associates Ltd and Parsons Brinckerhoff*

DECC (2011), *Great Britain's Housing Energy Fact File*

DECC (2011), *UK Energy in Brief*

DECC (2010), *Beyond Copenhagen: The UK Government's International Climate Change Action Plan*

DECC (2010), *National Renewable Energy Action Plan for the UK*

DECC (2010), *Initial Guidance on EU Funding Mechanism "NER300" for Carbon Capture and Storage (CCS) and Renewable Demonstration Projects*

DECC (2009), *UK Low Carbon Transition Plan White Paper*

DECC (2009), *National Renewable Energy Action Plan*

DECC Guidance Documents: *Feed-In Tariffs, Renewable Heat Incentive, Green Deal, Renewables Obligation, Warm Home, Smart Meters, Renewable Heat Premium Payment Scheme, UK Marine Energy Programme, Climate Change Agreements and Climate Change Levy*

DECC Statistics: *Energy Trends, Energy Price Projections, Estimates of Home Insulation Levels, Quarterly Energy Prices and Energy Consumption*

Department for Communities and Local Government (DCLG) (2011), *Code for Sustainable Homes and Energy Performance of Buildings*

DCLG (2010), *Code for Sustainable Homes: A Cost Review*

DCLG DCLG Housing and Planning Statistics

DCLG House Building Statistics

Department for Education and Learning Northern Ireland (DELNI) (2011), *Skills Strategy: Success through Skills, Transforming Futures*

Digest of United Kingdom Energy Statistics

Directive 2010-31 of the European Parliament and the Council of 19 May 2010 on the Energy Performance of Buildings (Recast)

Directive 2010-91 of the European Parliament and the Council of 16 December 2002 on the Energy Performance of Buildings

Ecorys (2011), *Research Study to Determine the Skills Required to Support Potential Economic Growth in the Northern Ireland Sustainable Energy Sector*

Ecotec (2009), *Assessment of Skills Provision for a Well Adapted and Low Carbon North-West*

Energy Act 2011

Energy Performance of Buildings Directive

Energy & Utility Skills (2009), *Workforce Planning Model*

English Housing Survey Headline Report 2010-2011

European Centre for the Development of Vocational Training (CEDEFOP) (2009), *Future Skill Needs for a Green Economy*

European Climate Forum (2011), *A New Growth Path for Europe*

European Commission (2011), *A Roadmap for Moving to a Competitive Low Carbon Economy in 2050*

European Renewable Energy Council (2008), *Renewable Energy Technology Roadmap: 20% by 2020*

European Environment Agency (2011), *Tracking Progress towards Kyoto and 2020 Targets*

EU Renewable Energy Sources (RES) Directive

Fankhauser, Kennedy and Skea (2009), *The UK's carbon targets for 2020 and the Role of the Committee on Climate Change*

Federation of Master Builders (2011), *Northern Ireland Manifesto Building for Success*

Foresight Group (2008), *Powering Our Lives: Sustainable Energy Management and the Built Environment*

Global Warming Foundation (2011), *The Myth of Green Jobs*  
Greener Jobs Alliance (2012) *Manifesto*

Health & Safety Executive (2011), *A Commentary on Routes to Competence in the Construction Sector*

HM Government (2011), *The Carbon Plan: Delivering our Low Carbon Future*

HM Government (2011), *Skills for a Green Economy*

HM Government (2011), *Planning our Electric Future: a White Paper for Secure, Affordable and Low Carbon Electricity*

HM Government (2009), *National Strategy for Climate Change and Energy*

Housing Executive (2012), *Northern Ireland Housing Market Review and Perspectives 2012-2015*

Housing Executive Northern Ireland (2010), *Sustainable Homes Report*

Innovas (2010), *Low Carbon Environmental Goods and Services Sector Analysis for Greater Manchester*

Institute for Public Policy Research (IPPR) (2012), *The True Cost of Energy*

IPPR (2011), *Warmth in a Changing Climate*

Intelligent Energy Europe Magazine (October 2011), *Renewable Energy*

Intelligent Energy Europe Magazine (April 2011), *Energy Efficiency*

Intelligent Energy Europe Magazine (November 2010), *Energy Education*

Intelligent Energy Newsletters 1-6

Living in Wales Property Survey 2008

Localism Act 2011

Low Carbon Cluster (2009), *Sector Skills Assessment*

Markit/CIPS UK Construction PMI (2012), *Press Release*

National Energy Services Ltd (2009), *Proposed Building Regulations part L1A 2010: Summary of the Consultation*

National House Building Council, Zero Carbon Hub and CITB-ConstructionSkills (2010), *Home Building Skills 2020*

National Skills Academy for Environmental Technologies (2011), *Low Carbon Business Opportunities*

North West Development Agency (2009), *Assessment of the Skills Need and Provision for a Low Carbon North West*

Office of the Deputy Prime Minister (2004), *Planning Policy 22*

Office for National Statistics Labour Market Statistics

Office for National Statistics (2012), *Output in the Construction Industry*

Price Waterhouse Coopers (2011), *UK Economic Outlook*  
 Pro Enviro (2010), *Skills for a Low Carbon and Resource Efficient Economy*  
 ProSkills (2011), *Labour Market Intelligence Report*

Ravetz (2008), *State of the Stock*  
 Renewables Advisory Board (2008), *2020 Vision: How the UK can meet its Target of 15% Renewable Energy*  
 Renewable Energy Association (2012), *Renewable Energy: Made in Britain*  
 Renewable UK (2011), *Working for a Green Britain: Employment and Skills in the UK Wind and Marine Industries*  
 RIBA (2010), *Response to Zero Carbon for New Non-domestic Buildings: Consultation on Policy Options*  
 Rockwool (2010), *A Guide to Part L 2010*

Scottish Government (2012), *Scotland's Renewable Energy Routemap and Electricity Generation Policy Statement Strategic Environmental Assessment*  
 Scottish Government (2012), *Second Progress Report on the Energy Efficiency Action Plan*  
 Scottish Government (2011), *Energy Efficiency and Microgeneration in the Built Environment*  
 Scottish Government (2010), *A Low Carbon Economic Strategy for Scotland*  
 Scottish Government (2010), *Conserve and Save: Energy Efficiency Action Plan*  
 Scottish Government (2009), *Climate Change (Scotland) Act 2009*  
 Scottish House Condition Survey 2010  
 Scottish House Condition Survey Key Findings 2010  
 Skills Development Scotland (2012), *Scotland's Low Carbon Market Opportunities and Skills Implications*  
 Skills Development Scotland (2011), *Skills Investment Plan for the Energy Sector*  
 Skills Provision Committee (2011), *A Picture of UK Training Provision for the UK Construction Industry*  
 Standard Industrial Classification of Economic Activities (SIC)  
 Strategic Forum for Construction and Carbon Trust (2010), *Scoping Paper: Construction Carbon 15% target by 2012*  
 SummitSkills (2010), *Potential Training Demand in Environmental technologies in Building Services Engineering*  
 SummitSkills (2010), *Sector Skills Assessment for the UK Building Engineering Services Sector*

UK Building Regulations  
 UK Commission for Employment and Skills (UKCES) Employer Skills Surveys 2010 and 2011  
 UK Commission for Employment and Skills (UKCES) (2010), *Strategic Skills Needs in the Low Carbon Energy Generation Sector - Evidence Report 16*



UKCES (2011), *Working Futures 2010-2020 Evidence Report 41*  
 UKCES (2010), *Skills for Jobs: Today and Tomorrow: National Strategic Skills Audit for England 2010*  
 UKCES (2009), *Towards Ambition 2020: Skills, Jobs, Growth*  
 UK Contractors Group (2011), *Making the Economic Case for Construction*  
 UK Contractors Group (2009), *Construction in the UK Economy*

Welsh Assembly Government (2009), *Capturing the Potential – A Green Jobs Strategy for Wales*  
 Welsh Assembly Government (2008), *Renewable Energy Route Map*  
 Welsh Government (2012), *The Welsh Government’s Priorities for Skills including Jobs Growth Wales*  
 Welsh Government (2012) *Energy Wales: A Low Carbon Transition*  
 Welsh Government policy documentation: *Climate Change Strategy for Wales; Sustaining a Living Wales; Towards Zero Waste*  
 Welsh Government Dwelling Stock Estimates 2010-2011  
 Willmott Dixon Group (2010), *Embodied Energy*

Zero Carbon Hub and NHBC Foundation (2011), *Introductory Guide to the Recast EPBD-2*

(6 March 2012), *Commons Library Standard note SN/EP/1432*  
 (2012), *Strategic Forum for Construction Targets*  
 (November 2011), *Papers from Durban Climate Change Conference*  
 22nd Annual ARCOM Conference, Birmingham (2006) *Informal Employment: a Threat or an Opportunity for the UK Construction Sector?*  
 2020 Energy Targets based on NACE Classification

<http://www.carbontrust.co.uk/policy-legislation/>  
<http://cutcarboninfo/what-can-i-do/green-deal-training-and-qualifications>  
[http://ec.europa.eu/europe2020/index\\_en.htm](http://ec.europa.eu/europe2020/index_en.htm)  
<http://www.europeanbusinessreview.com>  
<http://www.hse.gov.uk/migrantworkers/construction.htm>  
<http://www.scotland.gov.uk/Topics/Government/Finance/18232/TIF>  
<http://www.strategicforum.org.uk/>  
<http://www.sustainableconstruction.co.uk/history.htm>

## **11.2 STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES**

The UK Standard Industrial Classification (SIC) system provides an internationally-agreed taxonomy of defined economic sectors. These are published as 21 major categories, each of which contains four further levels of disaggregation. The SIC system is employed by the Office for National Statistics (ONS), the UK Commission for

Employment and Skills (UKCES) and all Sector Skills Councils.

The UK is required by European legislation to revise the Standard Industrial Classification (SIC) in parallel with the Statistical Classification of Economic Activities in the European Community (NACE) so that both systems remain identical down to and including the 4 digit class level<sup>324</sup>.

To inform the presentation of employer survey findings by industry sector within this report, the SIC codes have been clustered into four groups (A-D). A description of these cluster codes is presented in Table 30 below.

Below this Table 31 presents the UK SIC codes and descriptions identified and agreed with Build Up Skills as being within scope of this research and representative of the built environment sector<sup>325</sup>. Each SIC code is mapped to its lead Sector Skills Council.

**Table 30: Cluster codes and descriptions**

Cluster Code	Cluster Description
A	Development and construction of buildings
B	Electrical, plumbing and other construction installation activities
C	Building completion and finishing
D	Other built environment activities

**Table 31: UK SIC codes and descriptions identified and agreed with Build Up Skills as being within scope of this research**

SIC2007	SIC (2007) Description	Lead SSC	Cluster Code
35.11	Production of electricity	EU Skills	D
35.12	Transmission of electricity	EU Skills	D
35.13	Distribution of electricity	EU Skills	D
35.14	Trade of electricity	EU Skills	D
35.21	Manufacture of gas	EU Skills	D
35.22	Distribution of gaseous fuels through mains	EU Skills	D
35.23	Trade of gas through mains	EU Skills	D
41.1	Development of building projects	ConstructionSkills	A
41.2	Construction of residential and non-residential buildings	ConstructionSkills	A
42.11	Construction of roads and motorways	ConstructionSkills	D
42.12	Construction of railways and underground railways	ConstructionSkills	D

<sup>324</sup> Office for National Statistics (2007.) *UK Standard Industrial Classification of Economic Activities 2007 – Structure and Explanatory Notes*

<sup>325</sup> A key challenge to the identification of relevant SIC codes for this research was the lack of any UK or internationally-recognised codes relating to energy efficiency and renewable technologies.

42.13	Construction of bridges and tunnels	ConstructionSkills	D
42.21	Construction of utility projects for fluids	ConstructionSkills	D
42.22	Construction of utility projects for electricity and telecommunications	ConstructionSkills	D
42.91	Construction of water projects	ConstructionSkills	D
42.99	Construction of other civil engineering projects n.e.c	ConstructionSkills	D
43.11	Demolition	ConstructionSkills	D
43.12	Site preparation	ConstructionSkills	D
43.13	Test drilling and boring	ConstructionSkills	D
43.21	Electrical Installation	SummitSkills	B
43.22	Plumbing, heating and air conditioning	SummitSkills	B
43.29	Other construction installation	ConstructionSkills	B
43.31	Plastering	ConstructionSkills	C
43.32	Joinery installation	ConstructionSkills	C
43.33	Floor and wall covering	ConstructionSkills	C
43.34	Painting and glazing	ConstructionSkills	C
43.39	Other building completion and finishing	ConstructionSkills	C
43.91	Roofing activities	ConstructionSkills	C
43.99	Other specialised construction n.e.c	ConstructionSkills	C
74.9	Other professional, scientific and technical activities n.e.c	ConstructionSkills	D

### 11.3 STANDARD OCCUPATIONAL CLASSIFICATION (SOC) CODES

To inform the desk research, review of vocational education and training (VET), and the survey of employers – the UK Standard Occupational Classification (SOC) system was used as a starting point to identify the range of blue collar occupations currently reported to exist across the built environment sector.

The UK has sought to harmonise the SOC system as far as possible with the International Standard Classification of Occupations (ISCO) classification system.

It should be noted that the SOC system is not necessarily exhaustive and is limited by the lack of any UK or internationally-recognised codes relating to energy efficiency and renewable technologies.

### 11.4 APPROACH TAKEN TOWARDS VET MAPPING

Firstly, a list of accredited qualifications was extracted from the Register of qualifications available across England, Wales and Northern Ireland, as published by the Office of Qualifications and Examinations Regulation (Ofqual). Within the scope of this study, only those qualifications classified under Sector Subject Area 5 - 'Construction, Planning and the Built Environment' were included.

Additional data was sourced directly from the Scottish Qualifications Authority (SQA) in

respect of qualifications available in Scotland – again in relation to construction and the built environment.

The information published by Ofqual and SQA does not show the names or numbers of training providers running each qualification, nor details of training that is not accredited as part of the regulatory frameworks in operation across the four UK nations.

An alternative method was used in order to harvest the numbers of available courses relating to 'energy efficiency and renewable energy', as well the numbers and names of training providers delivering those courses. Firstly, a list of keywords relevant to 'energy efficiency and renewable energies' was agreed with Build Up Skills UK. Following this, a search was performed using a reliable national course database, in this case Hotcourses.com, to identify course titles and training providers within the agreed scope.

It should be noted that any training providers or courses not listed on Hotcourses.com will not be included, and insufficient resources were available to contact all UK training providers individually and on a speculative basis to establish the numbers and range of relevant courses on offer.

A list of 'priority skills' emerging from the survey of employers was then mapped to the titles and associated content descriptions of the course data extracted from Hotcourses.com. The purpose was to identify the number of courses currently available within the priority skill areas, and hence, determine possible 'gaps' in current training provision.

## Chapter 12: Glossary

BIM	Building Information Modelling
BIS	Department for Business, Innovation and Skills
BUSUK	Build Up Skills UK
CCA	Climate Change Agreement
CCEA	Council for the Curriculum, Examinations and Assessment (Northern Ireland)
CERT	Carbon Emissions Reduction Target
CESP	Community Energy Saving Programme
CPD	Continuing Professional Development
CRF	Carbon Reporting Framework
DAQW	Database of Approved Qualifications in Wales
DCELLS	Department for Children, Education, Lifelong Learning and Skills (part of the Welsh Government)
DCLG	Department for Communities and Local Government
DEC	Display Energy Certificate
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
EACI	Executive Agency for Competitiveness and Innovation
ECO	Energy Company Obligation
ECVET	European Credit System for Vocational Education and Training
EEDO	Energy Efficiency Deployment Office
EEPB	Energy Efficiency Partnership for Buildings
EFA	Education Funding Agency
EPBD	Energy Performance of Buildings Directive
EPC	Energy Performance Certificate
EQF	European Qualifications Framework
ESF	European Social Fund
FAB	Federation of Awarding Bodies
FE	Further Education
FIT	Feed-In Tariff
GDP	Gross Domestic Product
GVA	Gross Value Added
HE	Higher Education
IEE	Intelligent Energy Europe
IGT	Innovation and Growth Team (part of BIS)
JCQ	Joint Council for Qualifications
kW	Kilowatt
LCEA	Low Carbon Economic Area
LEPs	Local Enterprise Partnerships
LMI	Labour Market Information

MWh	Megawatt hour of energy
NAP	National Allocation Plan
NDEPC	Non-Domestic Energy Performance Certificate
NHBC	National House Building Council
NOS	National Occupational Standards
NSA	National Skills Academy
NVQ	National Vocational Qualification
Ofqual	Office of Qualifications and Examinations Regulation
ONS	Office for National Statistics
PV	Photovoltaic
QCF	Qualifications and Credit Framework
RIBA	Royal Institute of British Architects
RO	Renewables Obligation
SAP	Standard Assessment Procedure
SBEM	Simplified Building Energy Model
SCQF	Scottish Credit and Qualifications Framework
SDS	Skills Development Scotland
SIC	Standard Industrial Classification
SMEs	Small and Medium Enterprises
SOC	Standard Occupational Classification
SQA	Scottish Qualifications Authority
SSC	Sector Skills Council
SSO	Standard Setting Organisation
STEM	Science, Technology, Engineering and Mathematics
SVQ	Scottish Vocational Qualification
UKCES	UK Commission for Employment and Skills
UKGBC	UK Green Building Council
VET	Vocational and Educational Training
VRQ	Vocationally-Related Qualifications

## **BUILD UP Skills**

### **The EU Sustainable Building Workforce Initiative in the field of energy efficiency and renewable energy**

BUILD UP Skills is a strategic initiative under the Intelligent Energy Europe (IEE) programme to boost continuing or further education and training of craftsmen and other on-site construction workers and systems installers in the building sector. The final aim is to increase the number of qualified workers across Europe to deliver renovations offering a high energy performance as well as new, nearly zero-energy buildings. The initiative addresses skills in relation to energy efficiency and renewable energy in all types of buildings.

BUILD UP Skills has two phases:

- I. First, the objective is to set up national qualification platforms and roadmaps to successfully train the building workforce in order to meet the targets for 2020 and beyond.
- II. Based on these roadmaps, the second step is to facilitate the introduction of new and/or the upgrading of existing qualification and training schemes.

Throughout the whole duration of the initiative, regular exchange activities are organised at EU level to underline the European dimension of this important initiative and to foster the learning among countries.

The BUILD UP Skills Initiative contributes to the objectives of two flagship initiatives of the Commission's 'Europe 2020' strategy — 'Resource-efficient Europe' and 'An Agenda for new skills and jobs'. It is part of the Commission's Energy Efficiency Action Plan 2011. It will also enhance interactions with the existing structures and funding instruments like the European Social Fund (ESF) and the Lifelong Learning Programme and will be based on the European Qualification Framework (EQF) and its learning outcome approach.