

**Skills for a Low Carbon London:
Summary Report and Recommendations on the Skills Gaps in
the Energy Efficiency and Renewable Energy Sector in London**



SE² Ltd

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Foreword

The London Plan and the Mayor's Energy Strategy set out the future for the way that we use and supply energy in London - so that we reduce carbon dioxide emissions, tackle fuel poverty and promote economic development.

This will present significant challenges and opportunities to London's economy. The Mayor's Economic Development Strategy recognises that addressing energy efficiency can help deliver healthy, sustainable, high quality communities and urban environments. It identifies the need for London's investment in infrastructure and places, ensuring environmental sustainability of new developments through the promotion of sustainable design and construction methods. It also promotes energy efficiency, community heating and Combined Heat and Power (CHP) and renewable energy for London's enterprises to improve the efficiency of their use of energy as another crucial component.



This London Energy Partnership study, 'Skills Gap in the Energy Efficiency and Renewable Energy Sector in London', funded by the London Development Agency, identifies that progress towards these objectives presents major challenges to London's workforce in a number of sectors, particularly those relating to energy and the built environment. The drivers include recent and pending legislation and a wide range of policy initiatives, which will have an impact on sustainable energy requirements. There are also the challenges presented by major built environment developments in London, including the Olympic and Paralympic Games 2012 and the London Thames Gateway.

The study examines current energy efficiency and renewable energy skills and employment resources in London, the existing gaps, and the education and training provision that exists within the capital to help address these needs. It makes recommendations for the London Energy Partnership Skills Development Task Group and other partners to ensure that London is equipped to deal with the challenge ahead and maximise future opportunities.

This study has involved participation from organisations from a wide variety of sectors and interests, including employers, Sector Skills Councils, Further and Higher Education and independent sector education and training organisations.

We aim to work with the London Energy Partnership and its partners to examine the project's findings and recommendations further and agree on potential areas for joint working and intervention to help London to become a more environmentally efficient and sustainable world city.

A handwritten signature in black ink, appearing to read 'Manny Lewis'.

Manny Lewis
Chief Executive, London Development Agency

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Executive Summary

The energy efficiency and renewable energy sector has experienced rapid change over the last five years with the introduction of new legislation, government initiatives and incentives aimed at reducing energy consumption and carbon emissions. To respond to this, there is a need for considerable human resources with the right skills across London. The London Energy Partnership commissioned SE² Ltd to examine these increased demands on the energy efficiency and renewable energy sector, and to assess the impact it is having on skills and training provision.

The main objective of the study is to identify the energy efficiency and renewable energy resources and skills gaps in London and recommend ways to address any shortfalls. This report summarises both the desk and qualitative research, and provides a number of recommendations for the London Energy Partnership to take forward.

There is a huge array of policies, initiatives and other activities driving the market for skilled workers in the energy efficiency and renewable energy industries. These will have particularly high impact on skills in 2007-9.

The main difficulty for the energy efficiency and renewable energy sectors in terms of skills and training, is that they are not covered by one Sector Skills Council. Rather, no less than 14 of the Sector Skills Councils have energy efficiency / renewable energy occupations within their footprint to a greater or lesser degree. The study focuses on the six with most direct impact on skills and training for energy efficiency and renewable energy: Asset Skills, Construction Skills, EU Skills, Lifelong Learning UK, SEMTA and SummitSkills.

There are two key ways in which the Sector Skills Councils and the Sector Skills Development Agency can work with employers and education and training providers to support skills development of the workforce and productivity. The first are Sector Skills Agreements, which have been introduced as a way for Sector Skills Councils to exert strong influence throughout their sectors to help shape the supply of relevant training and skills and to raise employer commitment to skills. It is imperative that energy efficiency and renewable energy are included at an explicit level within the Sector Skills Agreements. All of the Sector Skills Councils are in the process of developing their respective Sector Skills Agreements at the moment, representing an opportunity to influence their sustainable energy content.

National Occupational Standards are the second method. They define the level of competence needed for a particular job role or occupation and provide the building blocks for the assessment of skills and training needs. The research found that there is an extensive range of education and training provision available in and around

London for energy efficiency, although provision for renewable energy is not as extensive. Despite this, energy efficiency is often left unstated in National Occupational Standards, and is assumed to be included as a part of ‘current, relevant legislation’. In an environment of rapidly changing legislation and policy, some aspects may be overlooked and employers and training providers may be unaware of the need to update the training or assessment procedures. This means that presently energy efficiency and renewable energy are unlikely to be covered adequately.

During this research, interviews were held with employers and education and training organisations, and a workshop was held to discuss the current status of skills and training for energy efficiency and renewable energy in London and to inform a number of recommendations.

A number of training providers said that they felt the existing courses they provide do not have sufficient energy efficiency or renewable energy content and they are not able to influence the content. The majority of training providers were operating at full capacity. Recruiting staff was seen as one of the major inhibiting factors for expansion.

The recommendations arising from this study are summarised below. All of the recommendations involve action on the part of the London Energy Partnership. Partners should take the lead in these activities, with support of the secretariat. Each recommendation has been ranked according to timescale, priority and cost.

	Recommendation	Timescale	Priority
1	Feed into the work of the London Skills and Employment Board	Immediate	High
2	Establish an Energy Trainers’ Forum for London	Immediate	High
3	Contribute to the development of training and qualifications for Domestic Energy Assessors	Immediate	High
4	Roll out and extend energy efficiency / renewable energy training for planners	Short-term	Medium
5	Actively contribute to the Mayor’s new Climate Change and Energy Strategy	Immediate	Medium
6	Communicate with London’s energy efficiency and renewable energy employers about regional strategies and initiatives	Short-term	Medium
7	Contribute to consultations on the development of the Building Regulations	Medium-term	Medium
8	Establish close links with the London environmental business support network	Immediate	Medium
9	Encourage London employers to go beyond minimum standards	Short-term	Medium
10	Work to ‘mainstream’ energy efficiency into every day working practices	Medium	Low

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Abbreviations

CHP	Combined Heat and Power
CoVE	Centres of Vocational Excellence
EEC	Energy Efficiency Commitment
EEPfH	Energy Efficiency Partnership for Homes
EPBD	Energy Performance of Buildings Directive
HIP	Home Information Pack
LDA	London Development Agency
LSC	Learning and Skills Council
NSA	National Skills Academies
QCA	Qualifications and Curriculum Authority
SAP	Standard Assessment Procedure
NOS	National Occupational Standards
RDA	Regional Development Agency
SME	Small and Medium Sized Enterprise
SSA	Sector Skills Agreement
SSC	Sector Skills Council
SSDA	Sector Skills Development Agency
TUSDAC	Trade Union Sustainable Development Advisory Committee

1 Introduction

The London Energy Partnership commissioned SE² Ltd to identify potential skills and capacity gaps in relation to energy efficiency and renewable energy in London, and to recommend ways to address any shortfalls.

The project is funded by the London Development Agency (LDA) and overseen by the London Energy Partnership Skills Task Group. In delivering this research, SE² worked closely with DG Associates, and have technical partners in PB Power, National Energy Services and Rickaby Thompson Associates.

1.1 Purpose

The purpose of the research project is to provide a broad understanding of the potential skills issues that may arise in relation to the energy efficiency and renewable energy sector across London. It identifies the skills required in the energy efficiency and renewable energy industry, as well as the capacity required in the education and training sector.

1.2 Methodology

The research took place during April to July 2006 and had three strands:

- a) **Desk research** examining:
 - i. Key legislation, London initiatives and other drivers that are causing skills gaps in the energy efficiency and renewable energy industry
 - ii. The current climate in the skills and training sector: who is responsible for training, the types of training, and labour market intelligence.
- b) **Qualitative research** consisting of:
 - i. 96 interviews with 92 different employers and education / training providers to assess the state of training and skills gaps in the energy efficiency and renewable energy sector in London
 - ii. A stakeholder event to discuss a series of skills and training scenarios, and to put forward recommendations of how we can move from the current situation towards best practice.
- c) **Data quantification** reviewing existing information about current and forecast employment in the energy efficiency and renewable energy industry in London.
- d) Synthesis of all the data collected and **recommendations for action** for the London Energy Partnership.

This report presented to the project steering group in August 2006 and the Skills Development Task Group in October 2006, is a summary of the research. Three interim reports are also available. These give more details of phases 1, 2 and 3 of the research.

2 Drivers for Change

2.1 Key Drivers

There is a huge array of policies, initiatives and other activities driving the market for skilled workers in the energy efficiency and renewable energy industries. A prioritisation exercise was undertaken to assess the impact of these drivers on the industry and on skills and training needs¹.

Eight key drivers were identified as being high impact (see Table 1 below for more information):

- Building Regulations, Part L (2006)
- Microgeneration Strategy: Power from the People (2006)
- EU Energy Performance in Buildings Directive
- Housing Act 2004
- Mayor's Energy Strategy and the London Plan
- Thames Gateway
- 2012 London Olympics
- Energy Action Areas²

Other drivers were also considered, but were assessed to have a lower impact on skills and training in London:

- a) Legislation and regulation
 - UK Government Energy Review, 2006
 - Code for Sustainable Homes
 - UK Climate Change Programme
 - Sustainable and Secure Buildings Act, 2004
 - Planning Policy Statement 22: Renewable Energy
 - Climate Change and Sustainable Energy Act, 2006
- b) London initiatives
 - London Climate Change Agency
- c) Other activities
 - Rising energy prices
 - Increased awareness of climate change
 - Energy Efficiency Commitment grants
 - Marketing activity (Energy Saving Trust / Carbon Trust)
 - Climate Change Levy / Enhanced Capital Allowances / Emissions Trading
 - Corporate Social Responsibility / Greening businesses

¹ Phase 1 of this project (the *Desk Research* report) provides further details on each of these drivers. Details of where to access these published documents listed can be found in Appendix 1.

² During the qualitative research the Energy Action Areas were found to be of a lower impact than the other drivers. However, they are likely to have a higher impact on companies operating in the areas.

In July 2006, the government announced the intention to give the Mayor of London a variety of new powers, including climate change and energy, planning and inviting him to chair a Board which will develop an adult skills strategy for London. These new powers were announced too late for inclusion in earlier phases of the research, but notes have been added to Table 1 below as they have now become key drivers.

Table 1: Key Drivers for Change in the Energy Efficiency and Renewable Energy Sector

Driver	Description	Skills Impact
Building Regulations Part L (2006)	The Building Regulations, Part L (2006) came into force on 6 April 2006. For the first time, domestic new and existing buildings, and non-domestic new and existing buildings, were each addressed in separate Approved Documents. The energy efficiency standards for all types of buildings have been improved, and more work has been brought into the scope of the Regulations. This will result in new dwellings being about 20% more efficient than under the 2002 Regulations. The next version of the Building Regulations is expected to be published in 2010.	<ul style="list-style-type: none"> • Energy efficiency standards must be demonstrated by an energy rating carried out by a competent person • Designers and specifiers must understand and use ‘design limits’ for insulation, efficiencies and controls • Sample air pressure tests must be carried out by independent accredited testers • More trigger points for energy efficiency works on existing buildings • Buildings with floor areas greater than 1,000m² are also subject to consequential improvements
Microgeneration Strategy: Power from the People (2006)	DTI’s Microgeneration Strategy suggests that by 2050, microgeneration could provide 30-40% of the UK’s electricity needs, and help to reduce household carbon emissions by 15% per annum. In the Strategy, the Government commits to a number of actions to help alleviate constraints on the microgeneration industry, including the Low Carbon Buildings Programme, and the possible inclusion of microgeneration in the Energy Efficiency Commitment (EEC) 2008-2011.	<ul style="list-style-type: none"> • UK has most of the technical skills required: there are no major skills shortages in the renewable energy sectors. This is supported by the 2004 London Renewables report.³ • Some traditional occupations (for example plumbers, electricians) may come under increasing pressure as demand increases • Sales and marketing function is also underdeveloped

³ “Skills and Jobs from Renewable Energy: Policies and Targets”, Brook Lyndhurst for London Renewables / London Energy Partnership, 2004

Driver	Description	Skills Impact
EU Energy Performance of Buildings Directive (EPBD)	The EPBD should have been transposed into the national law of all Members States by January 2006 (subject to limited provisions for delay until January 2009). It promotes improved energy efficiency in all new and existing buildings via a number of means, including certification of the energy performance of new buildings, and of existing buildings on change of occupancy; ‘consequential improvements’ to the energy efficiency of large buildings (over 1,000 m ²); and inspection regimes or energy efficiency advice for large boilers and heating, ventilation and air-conditioning plant.	<ul style="list-style-type: none"> • New- build requirements delivered via Building Regulations (see above) • Marketed sales of existing homes delivered via Housing Act (see below) • Mechanism for sales of existing non-dwellings and rental sector not yet known • Inspection regimes /energy efficiency advice for large buildings and heating, ventilation and air-conditioning plant.
Housing Act (2004)	From July 2007, the owners of homes offered for sale must provide a Home Information Pack (HIP - also known as the Seller’s Pack). In July 2006, the Government announced new proposals to phase the introductions of HIPs, prioritising the delivery of energy efficiency information with further testing later this year on other aspects of HIPs.	<ul style="list-style-type: none"> • The full HIP will be prepared by accredited Home Inspectors. The Department for Communities and Local Government has estimated that 7,500 Home Inspectors will be required in the sales sector and a further 6,500 in the rented sector in the UK. • However, the July 2006 announcement that only Energy Performance Certificates will become compulsory elements has shaken the confidence of the fledgling industry. Work is underway to develop National Occupational Standards and qualifications for Domestic Energy Assessors.

Driver	Description	Skills Impact
<p>London Plan and Mayor's Energy Strategy</p>	<p>The London Plan is the Spatial Development Strategy for Greater London and includes broad policies on energy. It has three cross cutting themes, including London's contribution to sustainable development in the UK. The Plan is supported by Supplementary Planning Guidance that states that carbon emissions from major commercial and residential developments should be reduced by at least 10% by the on-site generation of renewable energy. The Draft Further Alterations to the London Plan include draft policies requiring at least 20% required from onsite renewable and demonstration that heating, cooling and power systems have been selected to minimise carbon dioxide emissions.</p> <p>The Mayor's Energy Strategy ('Green Light to Clean Power') aims to "improve London's environment, reduce London's contribution to climate change, tackle fuel poverty, and promote economic development in the capital". Key proposals include:</p> <ul style="list-style-type: none"> • Reduce carbon dioxide emissions by 20% by 2010 (on 1990 levels), and by 60% by 2050 (on 2000 levels)⁴ • At least one zero-carbon development in every borough by 2010 • No occupied dwelling with a SAP (Standard Assessment Procedure) rating less than 30 by 2010, and less than 40 by 2016 • London should generate at least 665GWh of electricity and 280GWh of heat, from up to 40,000 renewable energy schemes by 2010. This should then at least triple by 2020 • Double Combined Heat and Power (CHP) capacity by 2010 (from 2000 capacity). 	<p>Both the London Plan and the Energy Strategy will create work in nearly all occupations being looked at in this research; from designers, planners and developers, to surveyors, installers and advisors.</p>

⁴ In the Draft Further Alterations to the London Plan this target (15% by 2010) is below the levels set in the Energy Strategy, although the long-term target of 60% by 2050 remains. This is for two reasons: firstly, Government has accepted that its own targets for reductions will not be achieved and this will significantly impact on London's targets. Secondly, the scale of London's future population and business growth will generate more demand. However, in achieving the targets the rate of per capita reduction in emissions will be high.

Driver	Description	Skills Impact
Thames Gateway	<p>Over the next ten years, 120,000 new homes will be built, along with supporting buildings, facilities, infrastructure and services. In 2002, the construction sector in Thames Gateway London provided around 65,000 jobs, including 30,000 self-employed workers - a substantial proportion of the total construction employment across London (135,000 jobs).</p> <p>There are a number of other development / regeneration and opportunity areas in the Greater London area that will also act as a driver.</p>	<ul style="list-style-type: none"> • Increased demand for electricity impacts on designers and installers of renewable technologies, and building services designers and engineers • Larger sites may opt for on-site CHP • Demand on planning and building control departments in relevant local authorities, and on architects and planning consultants designing for the sub-region • Ongoing requirement for operations and maintenance staff, including heating engineers, energy advisors and local authority inspectors
2012 London Olympics	<p>The London Organising Committee for the Olympic Games is committed to delivering a low carbon Games. As a one-off and high profile project, it is likely to attract the highest quality contractors; the risk associated with this is not that the infrastructure will not be delivered but that scarce engineering skills will be dedicated to the hand on Olympics to the detriment of other projects in London and elsewhere in the UK.</p>	<ul style="list-style-type: none"> • The development of the Olympic Park will place skills demands on designers, builders and installers • Trigenation will place demands on the designers, engineers and financiers of such projects • However, it is easy to over-estimate the importance of London 2012. The Olympic building programme is expected to account for less the 0.25% of the industry's national total despite its high profile.
Energy Action Areas	<p>Energy Action Areas were defined in the Mayor's Energy Strategy as a way of showcasing work that takes forward the objectives of the energy strategy. Energy Action Areas are neighbourhoods or regeneration areas where new ideas and practices in energy can be focused to achieve real change and tackle some of the problems of energy use in urban areas. Four pilot Energy Action Areas were announced in 2005: two developments in</p>	<ul style="list-style-type: none"> • As the projects progress, demands will be placed on engineering and installation firms, where skills shortages could occur, particularly if demand in the Energy Action Areas has to 'compete' with demand from elsewhere in the region (for example the Thames Gateway)

Driver	Description	Skills Impact
	Southwark (Concerto and Elephant & Castle), New Wembley, Merton and Barking Town Centre.	<ul style="list-style-type: none"> • However, skills gaps in renewable energy due to demand will generally be filled by installers expanding their capacity or new market entrants.

Additional Driver	Description	Skills Impact
New Powers for the Mayor of London (July 2006)	<p>In skills and training, the Mayor will:</p> <ul style="list-style-type: none"> • Appoint and chair an employer-led Board (The London Skills and Employment Board) • The Board will be responsible for developing a Skills and Employment Strategy for adults, setting priorities for the operational responsibilities of the Learning and Skills Council (LSC). <p>In climate change and energy, the Mayor will:</p> <ul style="list-style-type: none"> • Prepare and publish a statutory Climate Change Mitigation and Energy Strategy for London setting out plans to minimise emissions of carbon dioxide caused by the use of energy in London, help to eradicate fuel poverty; and harness economic opportunities for London from investment and innovation in energy technologies and energy efficiency • Prepare and publish a statutory Climate Change Adaptation Strategy setting out how the capital should adapt to the effects of climate change • In addition, the Greater London Authority will be subject to a specific 	<p><i>These new powers prove the timeliness of this research, which brings together skills, training and energy. The full impact of the various Boards and Strategies are yet to be understood, but it is vital that the London Energy Partnership work closely with the Mayor to ensure that the findings of this research are taken forward.</i></p>

	<p>duty to take action to mitigate the effects of climate change and help London adapt to its unavoidable impacts</p> <p>In planning, the Mayor will:</p> <ul style="list-style-type: none"> • Be able to direct changes to boroughs' programmes for the local development plans they produce • Have a stronger say on whether draft local development plans are in general conformity to the London Plan <p>Have the discretion to determine planning applications of strategic importance.</p>	
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2.2 Timings of Key Drivers

All of the drivers identified will impact upon the energy efficiency and renewable energy industries in London at different times and to different extents. Table 2 below gives an indication of when the key drivers will have the biggest impact. Dark grey shows where there is a high impact on skills, and lighter grey shows where there is a medium impact.

The table shows that there will be particularly high impacts on skills in 2007-9, as the Energy Performance of Buildings Directive comes into effect in all building sectors and large construction for London 2012 commences. This means that early and swift intervention may be required to address specific shortages in these areas.

Rising energy prices will continue to play a part in the skills picture but it is unlikely to have a dramatic impact on skills. Other drivers may also emerge in the future that could have a long term or high impact.

Table 2: Timings of Key Drivers

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Building Regulations	'06 Regs		'06 Regs		'10 Regs		'10 Regs		Next Version?			
Low Carbon Buildings Prog												
Microgeneration in EEC												
EPBD New Build												
EPBD Existing (Owner Occ)												
EPBD Rented												
Housing Act												
London Plan & Energy Strategy				London Plan Alterations								
Thames Gateway												
2012 London Olympics												
Energy Action Areas												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	

3 Responsibility for Skills and Training

3.1 Overview⁵

The education and training delivery system in England is complex, has evolved over time and will continue to adapt to changing needs and demands. This project concentrated on the activities of the Skills for Business Network, consisting of the Sector Skills Development Agency (SSDA) and the relevant Sector Skills Councils (SSCs). The Network has the responsibility of responding to employers' needs and demands, and of working with all relevant government departments and delivery agencies.

In order to influence the overall UK skills agenda, the SSDA and the SSCs have to be effective at a regional level, and they therefore have a regional presence. SSCs are expected to provide employers with a unique forum to express their skills and productivity needs. In this way, employers can have greater dialogue with government, can impact on policies affecting skills and productivity, and can have some influence on education and training providers.

The Leitch Report, published in December 2006, recommended a simplification of structures, increased focus and power for the SSCs and the establishment of a Commission for Employment and Skills, absorbing the SSDA, National Employment Panel and Skills Alliance. The establishment of the London Skills and Employment Board, chaired by the Mayor, gives London a headstart in these developments

3.2 Energy Efficiency, Renewable Energy, the SSDA and SSCs

The main difficulty for the energy efficiency and renewable energy sectors is that they are not covered by a single SSC but rather they should be represented in no less than 14 of the SSCs. Energy efficiency and renewable energy are not discreet sectors in which people with clearly defined job titles are employed; it can therefore be very difficult to identify skills and training needs.

⁵ Further details of where to access documents referred to in this section can be found in Appendix 1. Full details on the responsibilities for skills and training can be found in the Phase 1 report (Section 3).

For the purposes of this research, the six SSCs with the most direct impact on skills and training for energy efficiency and renewable energy are focused upon.

Asset Skills	Property, housing, cleaning and facilities management
Construction Skills	Construction and maintenance
EU Skills	Electricity, gas, water and waste management
Lifelong Learning UK	Community-based learning and development, further education, higher education, work-based learning and libraries
SEMTA	Science, engineering and manufacturing technologies
SummitSkills	Building services engineering (electro-technical, heating, ventilation, air conditioning, refrigeration and plumbing)

There are three main ways in which the SSDA and SSCs can work with employers and education and training providers to support skills development of the workforce and productivity: Sector Skills Agreements, National Occupational Standards and development of qualifications and qualification structures.

3.3 Sector Skills Agreements

Sector Skills Agreements (SSAs) have been introduced as a way for SSCs to exert strong influence throughout their sectors to help shape the supply of relevant training and skills and to raise employer commitment to skills. Agreement will be built around those issues that are of national significance to a sector, such as industry drivers and common skills requirements. The development of the agreements will provide a vehicle for bringing together all the main agencies that have an interest and a role in meeting sector skill needs.

A natural outcome of SSAs should be that funding will follow those qualifications and programmes that are identified as priorities in SSAs, thus giving providers the opportunity to develop new programmes for emerging skills gaps. It is imperative that energy efficiency and renewable energy are included at an explicit level within the SSAs and not left as an implicit intention within a broader heading. All of the SSCs are working on developing their respective SSAs and all are at different stages in the process.

ConstructionSkills has completed and published their SSA for England. Whilst the SSA does not refer to energy efficiency or to renewable energy, it does identify sustainability as one of the significant drivers influencing demand for skills in the sector. The SSA states that “the impact of the Government’s new UK Sustainable Development Strategy, the Sustainable Communities Plan, the Egan report on Skills for Sustainable Communities, the new Sustainable Buildings Code and the Secure and Sustainable Buildings Bill will all need to be factored into how we support future industry skills.” Legislation has also been identified as another key driver - “the

construction industry is under legislative pressure from all levels of government; the European Government, particularly in employment legislation; the UK Government, particularly in the importance of public services with the introduction of best value; sustainability and environmental impact.”

The Construction SSA together with the Skills Needs Analysis report that is completed as a part of the process of developing the SSA, recognise that making sustainability a reality will require everyone in the supply chain to know what their role is and to have the skills and knowledge to do it. Companies will have to change both what is built and how they build. This is highly dependent on the availability of sustainable products and materials and on clients specifying sustainable designs. Progress is expected to be slow with impetus for change only coming about when enforced by legislation.

Asset Skills have published a Skills Needs Assessment for London as a part of their work to prepare a Sector Skills Agreement. The assessment does not mention energy efficiency or renewable energy but identifies sustainability and regeneration as a driver for change in the sector. Sustainability and regeneration is defined as making the most of today without causing detrimental effects on the future. It is about making changes in the way companies operate and consume resources in a way that is beneficial for industries and consumers alike.

EU Skills, Lifelong Learning UK and SummitSkills are all working to publish their respective SSAs by mid 2007. SEMTA have published an SSA for the Electronics, Automotive and Aerospace Sectors and a draft SSA for the Marine Sector.

3.4 National Occupational Standards

National Occupational Standards (NOS) define the level of competence needed for a particular job role or occupation. They cover the key activities undertaken within the occupation in question and under all the circumstances the job holder is likely to encounter.

NOS provide the building blocks for, amongst other things, the assessment of skills and training needs, the development of qualifications and the development of training courses. A national database of NOS has been set up by the Skills for Business network where all of the approved NOS for all sectors can be accessed. A qualifications database is also available through the regulatory body, the Qualifications and Curriculum Authority (QCA).

Our research has identified that energy efficiency and renewable energy are very rarely referred to in National Occupational Standards. This is very worrying because clearly any qualifications that are based on the NOS are therefore unlikely to include either subject. Thus the training provision, to support the achievement of a

qualification is equally unlikely to make reference to energy efficiency or renewable energy.

3.5 Additional Work of the Sector Skills Councils

a) Asset Skills

In order to prepare the qualification for Home Inspectors⁶, Asset Skills carried out a research project in 2003 to establish the supply base for Home Inspectors. The report concluded that a total of approximately 7,500 Home Inspectors would be needed in England and Wales in order to supply the demand anticipated for Home Condition Reports. The pool of potential Home Inspectors in London was estimated at 175,374.

b) ConstructionSkills

ConstructionSkills have recognised they should do more than just include ‘compliance with relevant, current legislation’ into their NOS for sustainable developments including energy efficiency and renewable energy. Their publication, ‘Build to Last Strategic Action Plan’⁷, identifies four areas of intervention (Clarify; Lobby; Skills; Communicate) as being necessary to enable the sector to build sustainably and to realise the full commercial benefits. The delivery of these interventions will require a coherent infrastructure that brings together the key partners into an alliance for action.

c) EU Skills

EU Skills published an Occupational and Functional Map of the UK Renewable Energy Sector⁸ in December 2005. Whilst the purpose of the research was to establish the occupations and functions that exist within the emerging renewable energy sector, one of the useful outcomes was the identification of boundaries between Sector Skills Council (SCC) responsibilities, and ownership and accountability for skills development in the sector.

A range of recommendations were made in the report including:

- Set up a working group (with employers) to formally align the evidence from the research with the National Occupational Standards (NOS) setting process
- Match existing NOS against identified occupations supported by the relevant SSC
- Develop training provision forum/forums to ensure the right quantity and quality of training is available around the UK, with sufficient flexibility, to meet the demands of the sector

⁶ From June 2007 (in England and Wales), the owners of homes offered for sale must provide an Energy Performance Certificate. Further details are available in the Phase 1 report (Section 2).

⁷ ConstructionSkills: Build to Last Strategic Action Plan
www.constructionskills.net/research/researchactivity/nationalandregionalreports/buildtolast.asp

⁸ EU Skills: Occupational and Functional Map of the UK Renewable Energy Sector
www.euskills.co.uk/download.php?id=81

EU Skills published a second report, ‘Sector Skills Mapping in the Environmental Technology Sector’⁹, in March 2006. Whilst the research was carried out in the South West of England many of the findings are pertinent to London. Recommendations in the report of specific interest to this project are:

- SSCs are increasingly important in the skills needs of the environmental technology sector, and their continued involvement must be a priority
- A large number of job roles required by the sector are supplied by the wider industry. A useful area of study would be to determine a number of key, sector-specific occupations that require further support
- A comprehensive NOS mapping exercise would be a large piece of work, but would lead to a greater understanding of the gaps in provision.

d) SummitSkills

SummitSkills has started work on a project to map out the building services engineering skills required to create the built environment for the 2012 London Olympic and Paralympics Games, and develop training programmes to deliver them. They are also monitoring an integrated training plan for the Terminal 5 development that will be used as a model for future large projects.

e) Collaborative projects

Asset Skills, ConstructionSkills and SummitSkills worked on a collaborative project to develop a Skills Matrix for Sustainability¹⁰ in the built environment. The Matrix was designed for use by all the main functions working in the built environment - from investors and clients to contractors, suppliers, end users and demolition; it is a high level framework that charts the key functional players and the sustainability issues relevant to making their practices more sustainable.

A number of potential uses have been identified for the Sustainability Skills Matrix, with several recommendations for further work. The recommendations of specific interest to energy efficiency and renewable energy are:

- Promote the Sustainability Skills Matrix to employers, including SMEs, and raise awareness of sustainability skills issues and their impact on business activity, including increased performance and profitability
- Review existing NOS and qualifications in order to ensure that sustainability skills in the Matrix are already fully reflected in them and amend the content as required
- Identify sustainability skills gaps in existing NOS and qualifications and develop new NOS for inclusion in new qualifications

⁹ EU Skills: Sector Skills Mapping in the Environmental Technology Sector
www.euskills.co.uk/download.php?id=109

¹⁰ Skills Matrix for Sustainability in the built environment
www.ssda.org.uk/PDF/Sustainability_leaflet_020605.pdf

- Review existing Vocationally Related Qualifications to ensure that sustainability skills in the matrix are already fully reflected in them and revise qualifications as required.

ConstructionSkills, EU Skills, Proskills (for processing and manufacturing industries), Asset Skills and SummitSkills have been working on the development of a 14-19 diploma for the built environment. The diploma is expected to combine practical skills development with theoretical and technical knowledge. The diploma has been undergoing a pilot programme during 2006, and a number of the education / training organisations who participated in the field research have been involved with the programme. It was very disappointing, however, to learn from the interviewees that energy efficiency and renewable energy have not been included in the draft diploma.

3.6 Activities of Other Players in the Energy Efficiency Sector

a) The Energy Efficiency Partnership for Homes

The Energy Efficiency Partnership for Homes (EEPfH) commissioned a ‘Review of Skills and Training for Domestic Energy Efficiency’¹¹ in 2004; the final report was published in March 2005. The project concluded that the achievement of effective education, training and skills development in domestic energy efficiency would require cross-departmental, cross-sectoral and cross-organisational engagement.

b) London Renewables

London Renewables commissioned ‘Skills and Jobs from Renewable Energy: Policies and Targets’¹² in June 2004 to ‘provide a broad understanding of the potential skills issues that may arise in the context of developing a market for renewable energy sources’. The report focused on the skills associated with the installation and maintenance of renewable energy technologies.

The report concluded that the renewables industry has the skills and mechanisms in place to meet most future imaginable levels of demand. However, the report also states that renewable energy issues remain low on the agendas of many mainstream skills partnerships, and that this may be a concern for the achievement of the targets set in the Mayor’s Energy Strategy.

c) Trade Union Sustainable Development Advisory Committee (TUSDAC)

‘Greening the Workplace - a Trade Union Sustainable Development Strategy’ was published in June 2005. The aim of the strategy is to encourage trade unions to tackle sustainable development and environmental issues, especially the growing challenge of climate change, by using their influence for good at work, in their own organisations, through contacts with Government, and at an international level.

¹¹ Energy Efficiency Partnership for Homes: Review of Skills and Training for Domestic Energy Efficiency, www.est.org.uk/uploads/documents/partnership/Energy%20Efficiency%20Report%20March%2005.pdf

¹² London Renewables: Skills and Jobs from Renewable Energy: Policies and Targets - www.london.gov.uk/mayor/environment/energy/docs/renew_skills.pdf

‘Employment Creation and Environmental Policy: a literature review’¹³ was commissioned by TUSDAC to provide an insight into the potential changes in employment under a move towards a low-carbon economy, and suggest ways in which TUSDAC can contribute to the preparations. The report suggested that there may be a role for Government, through the Learning and Skills Council, in preventing potential skills shortages for some sustainable technologies.

¹³ TUSDAC: Greening the Workplace - a Trade Union Sustainable Development and Employment Creation and Environmental Policy: a literature review - www.defra.gov.uk/environment/tusdac/work.htm

4 Types of Training Available

4.1 Overview

There is an extensive range of education and training provision available in and around London for energy efficiency, including higher education, further education, short courses and open learning. Provision for renewable energy is not as extensive although it is developing fast; currently such courses can be found more easily outside of the London area.

Training for energy efficiency and renewable energy is provided not only as a specific course (for example Providing Energy Efficiency Services NVQ2; Energy Efficiency for Domestic Heating; Energy Efficiency Awareness; Renewable Energy for Heating) but also as a part of much broader courses (for example Sustainable Energy Systems MSc; Mechanical Engineering Services (heating and ventilation); Building Regulations short courses; Plumbing). However, energy efficiency and renewable energy does not always form an integral part of broader courses where perhaps it should.

Many education and training providers use National Occupational Standards (NOS) to inform the development of their courses. The responsibility for developing NOS lies with the Sector Skills Councils and the usual method for developing NOS is by working with employers to identify the essential outcomes of work activities/ functions. This practice works well in theory; however, occasionally problems can arise if the employers consulted are not up-to-date with the best working practices, relevant legislation and technologies in their sector.

All too often, energy efficiency is left unstated in NOS, and is assumed to be included as a part of 'current, relevant legislation'. This is a fairly common practice within NOS developments: it removes the requirement to update the NOS every time there is a change in legislation, thus providing some stability and 'shelf-life' to the NOS. The danger in this is that some aspects of legislation may get overlooked and employers and their training providers may not be aware of the need to update either the training or the assessment procedures.

4.2 Centres of Vocational Excellence (CoVE)

CoVEs are being established to play a vital role in ensuring that the UK develops a workforce that meets the needs of business - now and for the future - with particular emphasis on Level 3 skills. CoVEs focus on working with industry to ensure that training provision is demand-led, so their success depends on them working closely with employers and other interested parties such as SSCs and Regional Development Agencies (RDAs). CoVE status is awarded to a college or training provider for a specific skill area, for example Croydon College is a CoVE for building services engineering and the College of North West London is a CoVE in refrigeration, air conditioning and

electrical installation. It has not been possible to identify a CoVE for energy efficiency and/or renewable energy.

4.3 National Skills Academies

The Skills White Paper 2005 set out the intention to develop an initial network of 12 National Skills Academies (NSA) by 2008, with a longer term objective of at least one NSA for each major sector of the economy. NSAs are to be focused on vocational education and skills training, delivering to young people (16-19 year olds) and adults, and will be sector-based centres of excellence with national reach. SSCs are expected to take a leading role in the development of the NSAs and any proposals must be led by employers supported by the relevant SSC. Construction is one of the first four sectors to develop an NSA and is expecting to be open for learners from Autumn 2006.

4.4 London Initiatives

KnowledgeEast, a centre for knowledge exchange, is a consortium of universities and colleges in London (Goldsmiths, Laban, Queen Mary University of London, Ravensbourne College of Design and Communication, University of East London, University of Greenwich, London Metropolitan University and Trinity College of Music). It aims to give businesses easy access to experts, support and state-of-the-art facilities. Six business sectors have been established, one of which is environmental technologies. The consortium is able to work with organisations across the private and public sector to create new projects that stimulate innovative thinking in ready-to-grow companies.

WestFocus is a government funded consortium of universities (Brunel, Kingston, Roehampton, Royal Holloway, University of London, St George's University of London, Thames Valley and Westminster) based in South London, West London and the Thames Valley. It was created to help businesses, budding entrepreneurs, young companies, community groups, academics and students, through technology transfer, collaborative projects and knowledge networks. It transfers skills, advice and training from the university environment to the local community, and helps to ensure that future research is directed to solving real-world problems.

Train to Gain is a new service designed to help businesses get the training they need to succeed. It works through brokers who provide a free, independent and impartial assessment to identify what skills are needed in the business now and in the future. The brokers can help to arrange training and provide information about possible sources of funding. Train to Gain is being rolled-out nationally by the Learning and Skills Council.

5 Results from Employer Interviews

5.1 Overview

During the qualitative phase of the research, we carried out 76 interviews with 75 different employers across the energy efficiency and renewable energy sector in London. The results below summarise the findings from these interviews.

A wide variety of organisations were represented in the interviews, ranging from ‘one-man-bands’ to large national and multi-national companies. Some saw energy efficiency/renewable energy as integral to their every day work, whereas others (such as electricians and builders) saw it as peripheral. For some specialists, all of their staff are involved in the energy efficiency/renewable energy field in some way; other businesses may have a smaller team within a much larger organisation.

5.2 Impact of Key Drivers

Interviewees were asked what impact they thought the key drivers identified would have on their business and how they are responding to them. Changes to the Building Regulations were considered to have the greatest impact across all the occupations questioned (52%). It was also the driver that most organisations have responded to in terms of training. Several organisations said that legislation and regulation changed so often that it was difficult to keep up, and confusing for both their staff and customers.

The Mayor’s Energy Strategy has had a much lower effect on the companies interviewed; 60% of respondents said it only had a medium or low impact on their organisation. There is a low awareness of the Strategy generally; many organisations do not appreciate its links to the London Plan and planning requirements. The Thames Gateway development and 2012 London Olympics only really affect organisations located in that area, with the exception of the construction industry. There is some concern that the Olympics will draw skilled labour away from other geographical areas and client sectors of London.

Rising energy prices have more of an impact on organisations than a general raised awareness of climate change, because they directly affect the money in people’s pocket (45% compared to 24%). Heating and plumbing companies ranked this as the most important factor of those listed - it can lead to more sales leads for them.

Very large companies are able to respond to various drivers in a strategic way, and are sometimes in a position to influence the policy itself or to stimulate national skills programmes. Smaller companies respond on more of an ad hoc basis, with the trades focusing on remaining legally compliant. The trades can struggle with the cost of the training required, especially with increased competition from migrant labour.

5.3 Staff and Recruitment

Difficulties in recruiting skilled and/or qualified staff were of concern to about half of the companies interviewed. Interviewees reported particular problems in recruiting staff with adequate technical knowledge or experience, and many hire staff with some appropriate qualifications and then train them in specialist areas once inside the organisation. Several respondents also reported a problem in hiring senior, experienced staff.

A shortage of qualified engineers was widely mentioned. A general lack of architects was also reported. Other areas where recruitment is difficult include energy auditors, quantity surveyors and building surveyors. Some interviewees were also concerned about a lack of energy assessors.

79% of interviewees thought their numbers of energy efficiency/renewable energy staff would increase in the next five years. This is largely due to legislation, increased demand from customers, and rising energy prices. The rest of the interviewees thought staff numbers would stay the same; either due to budgetary constraints, the small nature of their business or because energy efficiency/ renewable energy are already mainstreamed into their work. No-one thought numbers would decrease.

66% of organisations who commented believed that all staff needed ongoing training, to keep up to date with technology and legislation, and for personal development.

5.4 Training and Education

77% of respondents said they often or very often invest in training. The larger organisations questioned tend to have a more formal training process than the smaller employers. They often provide training in-house, especially on their own systems and mandatory topics such as health and safety. External training providers are used for more technical subjects, sometimes delivering the training in-house for the organisation. Informal lectures/lunchtime sessions are also widely used to cascade information and knowledge. Training and development plans are included in staff appraisals, which tend to be carried out on an annual or six monthly basis, and budget is allocated as necessary.

Smaller organisations tend to take a more ad hoc approach to training, although some, for example advice providers and architects, do have formal staff development plans and training budgets. They are more likely to take advantage of opportunities as they arise. Smaller organisations are more likely to use external training providers, although some induction/internal systems training is carried out in-house.

The trades are obliged to keep their statutory qualifications and registrations up to date (for example Corgi), but otherwise tend to put more weight on on-the-job

training and experience. They make extensive use of training provided by manufacturers.

The key barrier to training mentioned by companies across all the sectors was time. Staff are very busy on a day-to-day basis, making it difficult to find the time to attend training courses. For smaller companies, this can also mean a loss of income for a day not worked. Cost was also often mentioned as a barrier to training, although this was less of a problem where there was an assigned training budget. Many of the trades people interviewed especially regretted the cost of compulsory courses. Getting information about the relevance of different training courses was also considered problematic.

An increase in knowledge was frequently cited as a key benefit of training, which can then be shared amongst colleagues. This can also help to enhance the reputation of the organisation. Increased personal performance was also a highly rated benefit.

5.5 Responding to Skills Gaps

When faced with a skills gap, 59% of respondents would undertake a recruitment programme. 67% of respondents use external consultants, and about 58% use contract staff. 65% would increase pay to attract the right candidate. 54% would restrict their business opportunities.

Local authorities seemed to be particularly stretched in terms of staff numbers; work is simply not being done because there is not enough staff. Conversely, some organisations, such as large companies and those with networks of sub-contractors, said they rarely face a skills shortage.

5.6 Other Issues Discussed

There were a number of issues raised by interviewees that were not part of the initial set of questions, but that are still of relevance to this research.

- **Government support for training** - Several respondents were keen to see more government funding to help meet the costs of training. This was particularly true of the trades and organisations attending mandatory courses.
- **Career path** - Some respondents felt that the skills gap could be addressed in the longer term by making their industry more attractive to school leavers and graduates. Others felt that there was a need for staff to have a multi-disciplinary skills base, both in the trades and in white collar jobs.
- **Communications** - Several respondents commented there had been insufficient communication about the Mayor's Energy Strategy, which meant they did not understand the impact it could have on their business.

6 Results from Education and Training Organisation Interviews

6.1 Overview

The qualitative research also included 20 interviews with 17 different education and training providers involved in energy efficiency training in some way across London. The results below summarise the findings from these interviews.

Education and training providers interviewed included universities, colleges of further education, private training providers, trade associations, professional bodies, and manufacturers.

6.2 Changes in Training Provision

66% of interviewees said they had expanded the range of courses they provided in the last five years. 27% of respondents now cover additional subjects, 27% have higher numbers of students, and 27% have different types of students. However, some particular courses provided by some organisations are no longer offered. 94% of interviewees said their course provision for 2006/07 was expanding.

94% of respondents said that market growth was a main opportunity that would prompt them to expand their teaching/training provision further. 87% said legislation was a big driver, and mentioned the Building Regulations in particular. Two-thirds of interviewees said both regeneration proposals and renewable energy developments were major drivers, and just over half mentioned the 2012 London Olympics.

Whilst many employers and students are interested in energy efficiency and renewable energy, this interest alone will not stimulate them to support any training or personal development in this area. Short courses are therefore often under-subscribed, making it difficult to run them on a viable basis. This comment was contradicted in other interviews, where we were told that short course provision has been expanded considerably, driven by legislative requirements.

The choice of title for a course makes a big difference to the take up of places on courses; marketing of courses and the choice of course title were considered to be very important to the success of a new course and to the continuation of some of the existing courses.

A number of people said that they felt that the existing courses that they provide do not have sufficient energy efficiency or renewable energy content and they are not able to influence the content in any way.

6.3 Training Capacity

The majority of training providers were operating at full capacity and some interviewees stated that they had significant waiting lists for places on their courses. It is relatively easy for providers to accommodate the development and delivery of

short courses and on a fairly short lead-in time. However, the fact that most providers were working at full capacity would not stop them from considering expansion over the next few years if a clear demand was identified or expressed by students, employers, funding bodies or others.

Recruiting staff was seen as one of the major inhibiting factors for education/ training organisations considering expansion (61% of respondents). One of the difficulties involved in recruiting qualified staff is that organisations find it very difficult to compete on salaries; many potential recruits can earn far more in industry than they can in education and training. Some organisations make extensive use of part-time and visiting lecturing/training staff. Whilst it may not be so difficult to recruit such staff, their time is at a premium and they may not always be available when needed.

Funding was not seen as a major problem (38% of respondents); many students are either self-funded or are sponsored by their employer. However, not all potential students or employers are prepared to pay for continued professional development. They may avail themselves of free training, such as that sometimes provided by manufacturers, but are often reluctant to pay for full-cost training and development unless completion of the course/qualification is a mandatory requirement.

The responses from organisations providing Learning and Skills Council (LSC) funded courses provide a different picture. It was reported that the increase in funding for 16-19 years olds and a reduction in funding for adult training means that funded courses cannot be offered to all those people who apply for a place. One interviewee reported that the LSC funding often dictates what can and cannot be offered in the way of courses and places on those courses.

Employer involvement was seen as very necessary to the success of some courses, particularly where work placements are needed for students to be able to consolidate their learning.

6.4 Teaching/Training Staff

The majority of teaching/training staff on the courses covered in the research are male; only two interviewees reported that they had female teaching/training staff on these courses.

The majority of staff hold relevant qualifications for the subjects they are teaching/training and they all have extensive experience of working in the relevant sector. Some staff may have a teaching/training qualification when recruited. However, this was not the norm and staff are often, but not always, expected to gain such a qualification once in post. 93% of interviewees felt that their teaching/training staff have the necessary skills and knowledge to deliver the energy efficiency component of the courses. However, they also commented that if the energy

efficiency and renewable energy components of courses are to be expanded then their teaching/training staff will require training and development in order to deliver the expanded provision.

6.5 Work Placements During and After Training

20% of interviewees include work placements as a component part of their courses. These placements are usually seen as highly beneficial for students to be able to consolidate their learning and to put into practice the skills they have been developing.

6.6 Contacts with Other Bodies

Many of the interviewees had established contacts and links with a variety of different bodies and for a variety of different reasons.

Contact with employers was generally seen as being very important and in many cases was essential for the success of the course and to the success of individual students. Contact with employers could be formal - such as membership of committees, provision of guest lecturers or attendance at monthly training group meetings - or informal - such as invitations to attend conferences, newsletter circulation and website links.

Contact with professional bodies was often as a result of the course(s) approval/ accreditation/validation processes. Professional bodies were seen as very useful sources of up-to-date technical information/issues/trends and market analysis.

Some of the interviewees had not heard of Sector Skills Councils (SSCs). Others said that they had very little contact with the SSCs and would like to see the situation improved. There was some concern that SSCs concentrate their efforts and attention on lower level courses and are not concerned about higher education. Some concern was also expressed about the appropriateness of a number of the qualifications/National Occupational Standards that have been developed via the SSCs.

Other contacts of value that were mentioned by interviewees were funding bodies (for example the Learning and Skills Council), awarding bodies (for example City & Guilds), trades unions (for example Amicus) and learned societies (for example the International Solar Energy Society).

7 Stakeholder Workshop

7.1 Overview

As part of the qualitative research, a workshop was held for employers and education/training providers. The main purpose of the workshop was to share and test the findings to date, and to then discuss the current status and potential best practice of skills and training in the energy efficiency and renewable energy sector in London.

Four scenarios were presented to the participants, based on two key variables: the pace of change and the integration of energy efficiency and renewable energy into all education and training plans and developments. Most organisations saw their sector as currently being in a disparate situation: all organisations wanted to move towards a more integrated and steady state situation.

7.2 Moving Towards Best Practice

Participants were invited to discuss how the industry could move from the current situation to best practice. The key actions identified were:

a) Strategic leadership from London

Many of the ideas discussed would be strengthened by a clear lead from the Mayor of London. The Greater London Authority should put pressure on national government to give energy efficiency/renewable energy skills issues a higher priority.

b) Integration of legislation

Organisations aspiring to meet and exceed various environmental legislation and regulation are often confused, as some of the codes and initiatives contradict themselves. This is particularly the case where national legislation is locally interpreted. The Greater London Authority could provide a framework of best practice guidance for working in London, explaining which standards it prioritises and is particularly keen to encourage.

c) Mainstreaming energy efficiency

There needs to be a more generalist view of energy efficiency and renewable energy. Energy efficiency training/incentives for large organisations should be on a par with health and safety.

d) Career paths

Without clear career paths, young people are unlikely to join an industry, which exacerbates the skills shortage situation. Trades industries need proper vocational qualifications that become the standard (like Corgi for gas fitters). Industry should be involved in schools at early phases of education.

e) Inclusion of energy efficiency/renewable energy in qualifications

It is important that energy efficiency/renewable energy is properly included in qualifications, and that training providers are not merely paying lip service to the sustainability industry. Sector Skills Councils and Awarding Bodies have a role to play in ensuring that energy efficiency/renewable energy is properly embedded in National Occupational Standards and relevant qualifications. There is a need for a strategic level organisation to co-ordinate energy efficiency/renewable energy training, empowered with funding and authority.

f) Information about training available

Employers across London do not know what energy efficiency and renewable energy training is available. Could a 'one-stop-shop' approach be adopted (like in the construction industry in East London)? Sector Skills Councils can play a role in disseminating this information.

g) 2012 London Olympics

The London Olympics is an opportunity to showcase the very best in energy efficient and renewable energy design, installation and workmanship. It can be used as a catalyst to encourage all London organisations to undertake energy efficiency/renewable energy works. Procurement for the Olympics must include an energy efficiency/renewable energy focus. Energy efficiency must be included in post construction checks.

8 Data Quantification

8.1 Overview

A review of data sources of current and forecast employment in the energy efficiency and renewable energy sector was undertaken as a supplementary piece of research. We used existing sources of data in this study, many of which has already been accessed during the earlier research and are publicly available. However, this has meant that the data is in different formats for different occupations.

As far as possible, we have tried to identify:

- a) The number of existing jobs in each sector
- b) The number of potential jobs in each sector (growth expectations)¹⁴

Further details of this study, with a full list of the data sources used, are available in the Phase 3 report.

8.2 Sustainable Energy in General

The Green Alchemy Report¹⁵ estimates that there are over 200 companies in London for whom sustainable energy is their core commercial business (2003). It calculates that 5000-7000 jobs will be created as a result of the expenditure to hit the Mayor's 2010 targets.

8.3 Energy Efficiency Installers

i) Gas Fitters

In 2006, there are 5,300 companies in London registered with CORGI and 9,900 installers (although this includes kitchen fitters, etc). By November 2006, 1,670 of the installers in London had achieved the Energy Efficiency for Domestic Heating Installers Qualification (C&G6084). We have not been able to identify any forecast figures.

ii) Oil Fitters

In 2006, there are 9,500 UK installers registered with OFTEC, 5,800 of whom have achieved OFTEC's energy efficiency qualification (OFTEC 105E). We have not been able to identify any forecast figures.

iii) Cavity Wall Insulation

There were 490 UK installers in 2006, approximately 100 of which operate in London. CIGA estimate that there is a staff turn-over of approximately 20%. They also estimate that 50-100 additional technicians will be required in London by the end of

¹⁴ Where forecast figures are given, this is usually for 'business as usual' growth, rather than how many workers are required to fully respond to the drivers identified in Section 2 above.

¹⁵ "Green Alchemy - Turning Green to Gold: Powering London's Future - a study of the sustainable energy sector." ESD for LDA, 2003

2007 due to increased EEC activity. CIGA confirmed there are concerns with regard to skills shortages: recruitment is the problem rather than training as companies have their own training programmes.

iv) Loft Insulation

We were unable to find data for loft insulation installers as the sector is too small. CIGA included loft installers in their estimates for additional staff required to meet increased EEC activity (see Cavity Wall Insulation above).

v) Solid Wall Insulation

There are currently 11 system designers and 33 applicator companies who are members of the Insulated Render and Cladding Association (INCA). INCA estimated this to be equivalent to approximately 1000 technicians UK-wide, with 200-300 operating in London. Increased EEC activity could increase demand for technicians by 20-30%, but INCA was confident that recruitment and training would not be a problem as plasterers can easily train to carry out this work. However, to meet this training need, grant funding for solid wall insulation has to be provided at an appropriate level.

vi) Glazing

In 2006 there were 3,090 installers in London. This is expected to rise to 3,350 by 2010.

vii) Plumbers and HVAC Installers

In 2006 there were 19,910 plumbers and HVAC installers in London. This is expected to rise to 22,360 by 2010, with an average annual growth requirement of 870 (2006-2010).

viii) CHP

We were unable to find data for CHP installers. However the CHP Association confirmed that skills are a concern for the sector, and there are worries that inexperienced/unqualified staff are carrying out installations.

viii) Electrical Trades

There were 23,070 electricians in London in 2006. It is anticipated that this will rise to 25,710 in 2010.

8.4 Renewable Energy Installers

The “Skills & Jobs from Renewable Energy” report¹⁶ states that there is no estimate of current employment in the renewable energy industry in London. Scenarios put forward suggest that 350-500 FTE jobs could be sustained by 2010.¹⁷

¹⁶ “Skills & Jobs from Renewable Energy: Policies and Targets.” LEP/London Renewables, 2004

The report concludes that *“the renewable energy installation sector can be expected to have the capacity to deliver on the Mayoral targets without generalised or large-scale public intervention on skills”*.

8.5 Construction (other)

Throughout 2005, there were approximately 1200 construction vacancies and 4000 construction job seekers in London, which includes bricklayers, roofers, plumbers and heating engineers and glaziers. On a national basis, staff turnover was 6.7%, 33% of construction workers were qualified to NVQ Level 2 or higher, and the average FTE training day per worker was 1.

There were 65,000 construction workers operating in Thames Gateway London in 2002 (and a further 40,000 in Essex and Kent). The LDA calculates that around 15,000 additional or replacement construction workers will be required between 2004 and 2016 to deliver new housing in the Thames Gateway.

Planned commercial developments in the Thames Gateway are expected to further boost demand for construction workers by an average of 5,000 a year (2004-2016).

The 2012 Olympics is expected to create a burst of demand for construction workers from 2007-10 with anticipated growth of 7,000 full time equivalent jobs. Civil engineers are expected to be in high demand. There will also be a legacy impact to 2020. However, despite its high profile, the Olympic building programme is expected to account for less than 0.25% of the industry’s national total number of workers.

8.6 Architects, Surveyors and Engineers

In 2003, there were 1,147 architect practices operating in London, 47 of which were listed by RIBA as providing ‘energy / environmental expertise’. There are currently 7,500 architects based in London who are RIBA Chartered Members (2006). Numbers are expected to rise by about 4% to 2010.

Assessments vary for the number of building services engineers operating in London. Experian/Summit Skills state that in 2005, there were 65,000 building services engineers in London and that this number will drop slightly to 64,600 by 2010. On the other hand, BISRIA states that there are 42,980 building services engineers (including electro-technical engineers, plumbers, heating and ventilation engineers and refrigeration and air conditioning engineers). BISRIA expects this number to increase

¹⁷ Includes photovoltaics, wind and solar water heating. Maintenance workers are not given special consideration: this will be a skills gap, with plumbers needing to upskill.

to 48,070 by 2010. Not all of the building services engineers are currently qualified to NVQ Level 3, but it is recognised that this will need to be the norm in the future.

There were 6,964 chartered surveyors in London in 2003, rising to 7,188 in 2004 when they constituted 5.2% of Asset Skills' footprint. This is expected to fall to 1.7% of their footprint by 2014.

8.7 Home/Energy Inspectors and Energy Advisors

There are currently 189 energy advice centres in the UK. There are 5 Energy Efficiency Advice Centres in London, funded by the Energy Saving Trust, with between 2 and 50 staff. There are some other independent advice providers (we interviewed two as part of our qualitative research). EDF Energy also runs an advice service.

Some local authorities also provide advice themselves. Most London Boroughs have their own Energy Management team, who as a minimum take care of the council's own energy use. Teams range from 1 to more than 10 staff, with the majority of teams being 1 to 3 staff.

The Government announced in July 2006 that the Home Condition Report part of the Home Information Pack would not be mandatory, which has caused confusion in the home inspector market. However, the Energy Performance Certificate remains compulsory and will be introduced in the marketed sales sector from June 2007. A new qualification for energy inspectors has now been developed (as this part of the Home Information Pack is being taken forward) but training has yet to commence. 6,500-7,500 inspectors will be required nationally.

There were 4,700 estimators, valuers and assessors in London in 2004 making up 3.4% of the Asset Skills footprint. This is expected to drop to 1.2% of the footprint by 2014.

8.8 Housing (other)

There were 22,057 housing and welfare officers in London in 2004, making up 13.7% of the Asset Skills footprint. This is expected to grow to 16.2% of the footprint by 2014.

There were 8,571 caretakers (e.g. of schools and other public buildings) in London in 2004, making up 6.2% of the Asset Skills footprint. This is expected to grow to 10.8% of the footprint by 2014.

There were 14,377 property, housing and land managers in London in 2004, making up 10.4% of the Asset Skills footprint. This is expected to fall to 3.7% of the footprint by 2014.

There were 6,082 estate agents and auctioneers in London in 2004, making up 4.4% of the Asset Skills footprint. This is expected to grow to 10.3% of the footprint by 2014.

8.9 Planners / Building Control

There were 472.8 FTE staff in planning policy in Greater London (against a budget for 521.2 FTE), 1,398 in development control (against a budget for 1,408.3 FTE) and 662.6 in building control (against a budget for 696.4 FTE). This includes professional, technical, administrative and support staff in London Boroughs, the GLA and the LDA.

The 'Recruitment and Retention of Planners' research¹⁸ reported a shortage of qualified planning staff; this is particularly acute in the public sector. Almost all of the London Boroughs reported that the problems were affecting their ability to deliver services. The shortages are a result of both recruitment and retention problems. It was reported that development control posts are harder to fill than policy posts with enforcement and urban design posts being the hardest to fill. Since 1997 the demand for junior planners has increased substantially: nationally 798 posts were advertised in 1997 whereas 1,307 posts were advertised between July 2001 and June 2002. The Planning Schools have experienced a declining number of applications and this is now threatening the education provision.

¹⁸ "Recruitment and Retention of Planners." Tim Edmundson Planning Research for the Association of London Government, the RTPI and the Association of London Borough Planning Officers, 2004

9 Recommendations

The recommendations given below are the main outputs from this research, and are derived from a synthesis of the desk and qualitative research outlined above. All of the recommendations involve action on the part of the London Energy Partnership. Partners should take the lead in these activities, with support of the secretariat.

The recommendations are split into two parts. The first part focuses on recommendations directly related to skills and training in London, and should be of particular interest to the London Energy Partnership Skills Task Group. The second part focuses on recommendations with a wider energy efficiency/renewable energy impact. Each recommendation has been ranked according to timescale, priority and cost. In broad terms, 'immediate' means the recommendation should be acted on during 2006; 'short-term' means 2007; and 'medium-term' means 2008.

9.1 Skills

Recommendation 1: Feed into the work of the London Skills and Employment Board

Timescale: Immediate

Priority: High

The Mayor was invited by the Secretary of State for Education and Skills in July 2006 to appoint and chair an employer-led Skills and Employment Board which would have the responsibility to devise a strategy for skills and employment in London.

The work of the Board will be given a legislative basis through the provisions in the Further Education and Training Bill currently before Parliament

The Board met for the first time in December 2006 and the Board's first strategy will be developed in the coming months.

The publication of this skills research and report has proved timely, and positions the London Energy Partnership to feed into discussions on the Board's skills and employment strategy.

The following supplementary recommendations reflect areas of work that the London Energy Partnership should engage with the Skills and Employment Board about. The London Trainers' Forum should also engage with these activities (see Recommendation 2 below).

	Recommendation	Timescale	Priority	Cost	Outcome
1a	Communicate the findings and recommendations of this research to the Mayor, his key advisors, and the Skills and Employment Board, to help ensure that the energy efficiency and renewable energy sector are fully included in their work.	Immediate	High	Time	London decision makers are aware of skills and training needs in the energy efficiency and renewable energy sector, and include this area in their programme of work
1b	Influence the new London Skills and Employment Board to work with the Sector Skills Councils with an energy efficiency/ renewable energy footprint	Immediate	High	Time	Energy efficiency is fully integrated into Sector Skills Agreements, National Occupational Standards and qualifications frameworks.
1c	Influence the Skills and Employment Board to encourage colleges and the Learning and Skills Councils to build collaboration and rationalise education and training provision across London	Short-term	High	Time	Increased confidence in the availability of courses leading to improved marketing, greater support by employers and take-up by learners and increased confidence for college staff.

Recommendation 2: Establish an Energy Trainers' Forum for London

Timescale: Immediate

Priority: High

There is an urgent need for co-ordination of energy efficiency and renewable energy training across London. The London Energy Partnership is in a unique position to bring together key players, including training providers, professional/ trades bodies, Skills for Business and funding bodies. This body needs to have strong and clear links with the Skills and Employment Board, and directly feed into their programme of work.

The following supplementary recommendations suggest areas where this Forum can work and open up channels of communication between different stakeholders.

	Recommendation	Timescale	Priority	Cost	Outcome
2a	Provide a forum for closer collaboration between Sector Skills Councils and training/ education providers.	Immediate	High	Time	Skills and training needs are more readily recognised and acted upon
2b	Support the London Energy Partnership in their engagement with the Mayor's Skills and Employment Board (see Recommendation 1)	Immediate	High	Time	More weight is given to the London Energy Partnership's activities by this cross-sectoral forum, and energy efficiency / renewable energy is prioritised by the Skills and Employment Board
2c	Influence other agencies in London with an interest in energy efficiency and renewable energy skills and training - for example the London Development Agency and the Learning and Skills Council.	Short-term	High	Time	Creative, cross-sector thinking can ensure that there is no trade off between investing in a base of IT/engineering/ business skills on the one hand and energy efficiency/ renewable energy skills on the other.
2d	Approach the Sector Skills Development Agency with a view to commissioning a project that would seek to establish and agree the allocation of responsibilities of the relevant Sector Skills Councils in relation to energy efficiency.	Short-term	High	Funding required	Coherence across the sector for the first time leading to improved communications and initiatives and acceptance of responsibilities for implementing energy efficiency into all relevant developments.
2e	Explore with Sector Skills Council whether some skills training is essential and therefore merits subsidy or incentive.	Medium-term	Low	Time	Greater take-up of training, particularly among SMEs. Tackle barrier of cost of training, especially with regard to obligatory training.

	Recommendation	Timescale	Priority	Cost	Outcome
2f	Work with business support organisations such as Serco, training providers, publications such as HotCourses, training websites and ‘one-stop-shops’ for training (as exists in east London for the construction industry) to specifically promote energy efficiency/renewable energy courses.	Medium-term	High	Funding required	Greater accessibility of training will encourage greater take-up, improving London’s skills base. The London Energy Partnership may also wish to develop its own web portal for energy training information.
2g	Identify ways of supporting the cross-skilling of plumbers, electricians and others to meet emerging demand for renewable energy systems. This should include sales and marketing skills.	Medium-term	Medium	Time	Increased installation capacity means that more renewable technologies can be installed, at lower prices, in a more competitive market. Skills are the catalyst for wider market development.
2h	Act as a catalyst for and partner in communications activities showcasing careers opportunities in energy efficiency/renewable energy.	Medium-term	Medium	Time Funding required	Increased demand for training in energy efficiency/renewable energy; wider pool of labour available to London’s employers.
2i	Consider what support could be provided to businesses to encourage staff to teach on energy efficiency/renewable energy courses.	Medium-term	Medium	Funding required	Greater availability of training resource, leading to more students trained; in addition, tutors gain experience and knowledge in teaching and education.
2j	Facilitate partnerships between the Greater London Authority and those energy efficiency/renewable energy equipment manufacturers with exceptional training programmes.	Medium-term	Low	Time Funding required	Provide trades people with core skills in a cost-effective manner.

Recommendation 3: Contribute to the development of training and qualifications for Domestic Energy Assessors

Timescale: Immediate
Priority: High
Cost: Time investment

It was announced in July 2006, that Energy Performance Certificates will be introduced ahead of the other aspects of the Home Information Pack. This change in priorities has introduced uncertainties for the sector, and for the 4,500 people already training to carry out this work. However, it also means that the Energy Performance Certificates will be at the front of Government promotional activity and so under closer public and industry scrutiny. The burst of demand for Domestic Energy Assessors from mid-2007 onwards requires large-scale training provision and promotion.

The Department for Communities and Local Government and Asset Skills are currently developing National Occupational Standards for Domestic Energy Assessors, who will deliver the Energy Performance Certificates. The London Energy Partnership should act now to influence this work, and to ensure that the region's needs are met.

The London Energy Partnership should also work with the training providers for Domestic Energy Assessors to help ensure that London's demand is met.

The London Energy Partnership could then actively promote (or influence the promotion of) Energy Inspector careers to encourage retraining and entry into the market.

Recommendation 4: Roll out and extend energy efficiency / renewable energy training for planners

Timescale: Short-term
Priority: Medium
Cost: Funding required

The recent training for local authority planning officers, developed and funded by the London Energy Partnership, was well received. However, it was not attended by representatives from all boroughs and those boroughs that did participate now have new staff that require training.

A roll out of the training programme could be delivered by the London Energy Partnership, if funding could be secured. With a further step, however, the training programme could be developed into a 'train the trainers' programme, to enable a more cost-effective cascade of information across the capital. It could also be linked into a wider framework of 'green' training for planners, to include waste and recycling for example.

9.2 Support

Recommendation 5: Actively contribute to the Mayor's new Climate Change and Energy Strategy

Timescale: Immediate

Priority: Medium

Cost: Time

As well as a new role in adult skills in London, the Mayor's powers will also be extended in the area of climate change and energy. Specifically, this means:

- The Mayor will prepare and publish a statutory Climate Change Mitigation and Energy Strategy for London setting out plans to minimise emissions of carbon dioxide caused by the use of energy in London, help to eradicate fuel poverty; and harness economic opportunities for London from investment and innovation in energy technologies and energy efficiency
- The Mayor will prepare and publish a statutory Climate Change Adaptation Strategy setting out how the capital should adapt to the effects of climate change
- The Greater London Authority will be subject to a specific duty to take action to mitigate the effects of climate change and help London adapt to its unavoidable impacts

Again, the timing of this skills research and report has proved critical, and enables the London Energy Partnership to ensure that training and skills are embedded within the new Climate Change Mitigation and Energy Strategy. We recommend that the London Energy Partnership be an active partner in the development of this strategy and facilitate the active involvement of industry members in the creation of new energy efficiency/renewable energy skills policies.

A statutory strategy should increase demand for energy efficiency/renewable energy advice, support and technologies in the wider London community.

Recommendation 6: Communicate with London's energy efficiency and renewable energy employers about regional strategies and initiatives

Timescale: Short-term

Priority: Medium

Our research showed that there is low awareness of the Mayor's Energy Strategy, and although this may change with the new, statutory Climate Change and Energy Strategy, a strong communications plan is still required.

The London Energy Partnership has a wide membership, which should form the basis of communications to the energy efficiency and renewable energy sector in London.

Regular communications, for example a monthly e-newsletter, would help to keep partners abreast of strategic developments on a regional and national level.

Employers across London are confused by the array of policies and strategies in this field, which are perceived to change frequently, costing companies money. There is a need for clear, concise and easily accessible information to help steer a path for organisations keen to embrace good practice standards.

Specific areas of communication that have been flagged during this research are:

	Recommendation	Timescale	Priority	Cost	Outcome
6a	Communicate the need for Energy Performance Certificates	Short-term	Medium	Time	Stimulate consumer and business demand for new labour force of Domestic Energy Assessors
6b	Influence the development and delivery of clear, concise communications and effective support to London's energy efficiency/renewable energy employers once the new Climate Change and Energy Strategy is in place.	Medium-term	High	Time	Increased awareness and certainty of London's long-term energy framework, along with a better understanding of the business opportunities it provides, may encourage employers to invest in skills.
6c	Consider developing an online "London Guide" aimed at all energy efficiency and renewable energy employers in London, outlining prevailing legislation in a short, easy-to-use format. This could incorporate national Government guidance as well as regional and local requirements, and include signposting to more detailed sources of guidance, information and training. Such a Guide would need to be supported by a promotional campaign to ensure its reach; this could also be linked to business support offerings.	Medium-term	Medium	Funding required	Employers are aware of the conditions under which they should be operating.

Recommendation 7: Actively encourage partners to contribute to consultations on the development of Building Regulations

Timescale: Medium-term

Priority: Medium

Cost: Time

Partnership working may encourage London businesses to take a more proactive approach to energy in Building Regulations, and to more effectively prepare themselves for skills and training impacts as new Regulations are introduced.

It is recommended that the London Energy Partnership encourage London's energy efficiency/renewable energy employers to contribute to consultations on the development of Building Regulations, taking particular account of the skills and training impacts this might have.

Recommendation 8: Establish close links with the London environmental business support network

Timescale: Immediate

Priority: Medium

Cost: Time

The London Development Agency has recently appointed Atkins to co-ordinate 'green' business support activities across the region, and will launch the overall regional co-ordination structure in October/November 2006. Early engagement with Atkins will help to ensure the energy efficiency and renewable energy sector are well represented in their work, and that skills and training opportunities are not missed.

Areas identified within this research that the network could particularly support the London Energy Partnership include:

- Provide support and information to London's employers to encourage them to seek tighter Building Regulations, rather than adopting a hostile stance
- Engage with the hospitality and leisure sector in areas surrounding the Olympic Park, to help stimulate demand for energy efficient refurbishment, thus increasing the flow of sustainable energy business opportunities to design, construction and installation staff
- Promote energy efficiency/renewable energy courses to employers across London
- Promote Energy Performance Certificates to the business sector.

Recommendation 9: Encourage London employers to go beyond minimum standards

Timescale: Short-term

Priority: Medium

Both the 2012 London Olympics and the Thames Gateway development, along with the Energy Action Areas, provide London with unique opportunities to showcase excellence in energy efficient and renewable energy design and innovation. These opportunities must not be missed and the London Energy Partnership should play a role in ensuring this.

The following supplementary recommendations reflect key developments where the London Energy Partnership should intervene to ensure energy efficiency and renewable energy design, procurement and construction opportunities are being maximised.

	Recommendation	Timescale	Priority	Cost	Outcome
9a	Influence the Olympic Delivery Authority, central Government (Department for Culture, Media and Sport; Department for Communities and Local Government) and other Olympic partners to place higher building energy standards on Olympic developments than those required under Building Regulations.	Immediate	Medium	Time	Requirement for training/skills development among the construction trades, continuing knowledge development among planners.
9b	Work with professional bodies/ associations to promote the opportunities and requirements of working within the Thames Gateway to relevant professions.	Short-term	Medium	Time	The Thames Gateway is developed to high energy efficiency standards, by a skilled workforce.
9c	Support the implementation of the highest standards in Government's Code for Sustainable Homes and to provide skills support to developers seeking to comply with the Code.	Short-term	Medium	Time	Higher standards than Building Regulations for new housing built with public funding.

	Recommendation	Timescale	Priority	Cost	Outcome
9d	Consider looking for a mechanism for achieving economies of scale on the technologies that London needs but the market is currently failing to deliver. These would particularly include solid wall insulation (internal and external), communal heating systems with combined heat and power, and microgeneration technologies.	Medium-term	Low	Funding required	Increased rate and continuity of demand may help to overcome some of the seasonal peaks and troughs in these sectors and should lead to an increased investment in training as businesses look into the longer term. Skills in designing and installing emerging technologies will be developed.

Recommendation 10: Work to ‘mainstream’ energy efficiency into every day working practices

Timescale: Medium

Priority: Low

Cost: Funding required

Energy efficiency is often a marginal activity in professional or trade training. Education and training providers recognise the need for energy efficiency training to be raised more on a par with health and safety training; this would give it due prominence in the development of and training for all workers.

Investigate how mainstream standards (such as Investors in People, International Organization for Standardization) can be enhanced to include energy efficiency training. This will help to mainstream energy efficiency for all organisations.

10 Appendix

10.1 Bibliography

The list below gives details of where to access the key documents discussed in this report. Further references can be found in our Phase 1 and Phase 2 reports.

- Building Regulations, Part L (2006)
www.communities.gov.uk/index.asp?id=1130726
- Microgeneration Strategy: Power from the People (2006)
www.dti.gov.uk/energy/sources/sustainable/microgeneration/strategy/page27594.html
- EU Energy Performance of Buildings Directive
http://eur-lex.europa.eu/LexUriServ/site/en/oj/2003/L_001/L_00120030104en00650071.pdf
- Housing Act (2004)
www.opsi.gov.uk/acts/acts2004/20040034.htm
- The London Plan
www.london.gov.uk/mayor/strategies/sds
- Mayor's Energy Strategy: Green Light to Clean Power
www.london.gov.uk/mayor/strategies/energy/index.jsp

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Working as an independent body, the London Energy Partnership uses the power of partnership to enable London to respond to the challenges of climate change, security of energy supply and fuel poverty. The London Energy Partnership steering group members and observers include representatives from Argent Group Plc, Business Councils for Sustainable Energy UK, Carbon Trust, EDF Energy, Energy Saving Trust, RBC Capital Markets, Greater London Authority, Government Office for London, London Borough's Energy Group, London Climate Change Agency, London Development Agency, London Sustainability Exchange, Renewable Energy Association, London South Bank University and Thames Gateway London Partnership.