



West Midlands
Regional
Observatory

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Environmental Technologies project
Phase 1: Review of secondary sources
of data & intelligence

March 2009

Version D1.1
12 March 2009



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1 Introduction

The potential contribution environmental technologies such as renewable energy, pollution monitoring and waste management can make to the regional economy is an area of interest for a number of RSP partners, notably, AWM, the LSC and local authorities. The Observatory has been commissioned to carry out research to identify:

- The relative importance of these industries to the regional economy and the profile of the workforce by gender, ethnicity, age and qualification attainment
- Key developments in the sector, potential market opportunities and drivers of skills change
- Current and potential labour and skill needs and any gaps and shortages
- Investment in training and upskilling by employers
- The use of publicly funded, private sector and internally run training and any gaps or weaknesses in provision
- Recommendations and actions to address any issues identified

The project has three key phases:

- Phase 1 - a review of secondary sources of data and analysis
- Phase 2 - quantitative survey of businesses
- Phase 3 - qualitative research to include face to face interviews with businesses and the development of case studies

This report highlights key messages from phase 1 of the project. It will help inform, and will be supplemented by, findings from phase 2 (due to be completed by the end of March 2009) and phase 3 (due to be completed by the end of May 2009).

Intelligence from published sources on the region's environmental technologies sector is limited - and the phases of primary research are designed to address this gap. Nevertheless the following sources provide useful baseline information on the importance of the sector to the regional economy, recent trends in employment, the profile of the workforce, key developments and drivers of skills change, emerging skill needs and skill gaps and shortages:

- Skill needs for the West Midlands environmental technologies cluster published by LSC Black Country and produced by ECOTEC Research and Consulting Ltd (February 2004)
- Study of emerging markets in the Environmental Industries sector published by DEFRA (November 2006)
- Cluster desk research published by AWM (Summer 2008)

- Occupational and functional map of the UK renewable energy sector published by EU Skills (December 2005)
- Emerging markets in the Environmental sector published by UK CEED (November 2006)
- LSC National Employers Skills Survey (2007)
- ONS Annual Business Inquiry (2003-2006)
- Labour Force Survey (Q3 2008)

2 The importance of the sector to the regional economy

At a national level environmental technology is a rapidly developing sector. In 2004 (latest available figures) the sector had a turnover of £25 billion, and employed around 400,000 people and it is predicted that turnover is likely to grow to £46 billion by 2015¹. While the largest industries in employment terms are recycling and water/waste water treatment industries such as energy management, renewable energy, environmental consulting and contaminated land remediation are judged to have the strongest growth potential².

Published data provides an initial picture of the importance of the sector to the regional economy. In 2006 (latest available figures) just over 30,000 people were employed in just over 1,500 businesses across the West Midlands³. While the number of businesses has increased by 3% since 2003 numbers employed have fallen slightly by 0.2% over the period.

Rates of employment growth have been uneven across the sector. While employment in waste collection and disposal increased by more than 1,100 between 2003 and 2006 there has been a decline of more than 2,600 in electricity, gas and water (see chart 1 overleaf).

It should be noted, however, that the official figures are likely to under-estimate the size and growth of the sector across the region in recent years. The limitations of Standard Industrial Classification (SIC) codes means that companies whose main business may be in other areas but are diversifying into environmental technologies are not captured. For example, recent research suggests that the definition should also include renewable energy (such as hydro, wave and tidal power) and emerging low carbon activities (such as reduced emissions from within the transport and construction sectors, nuclear energy, energy management, carbon capture and storage and carbon finance). This increases employment figures to 74,000 for the West Midlands from almost 4,200 companies⁴.

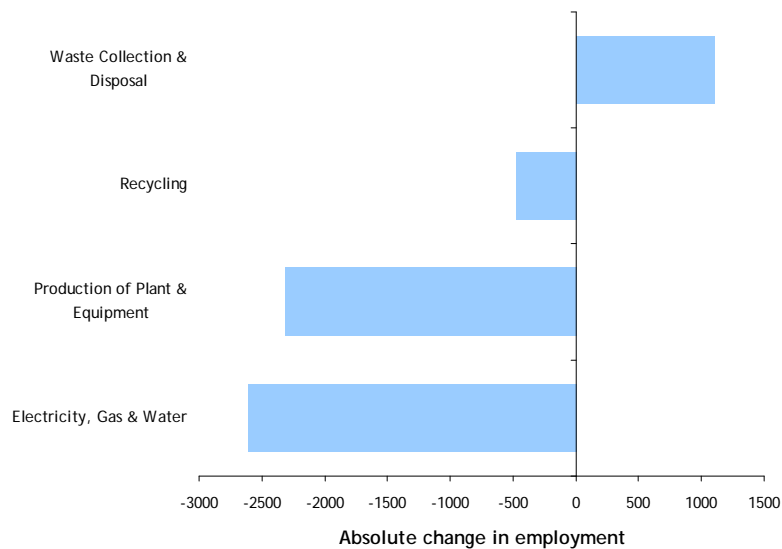
¹ Source: DEFRA Study of Emerging Markets in the Environmental Industries Sector, 2006 (it should be noted that these forecasts take no account of the impact of the current economic downturn)

² Source: UK CEED Emerging Markets in the Environmental Sector, 2006

³ Source: ONS Annual Business Inquiry, 2006

⁴ Low Carbon and Environmental Goods and Services: an industry analysis published by Innovas Solutions Ltd (Commissioned by BERR) on the 9th March 2009

Chart 1: Absolute change in employment across the region 2003-2006



Source: ABI

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There is significant potential for the further growth and development of the sector in the West Midlands, reflecting:

- A strong base of businesses with particular strengths in renewable energy and waste and a record of innovation in markets such as electrical engineering
- A number of universities with strengths in environmental technologies from which businesses can source skilled graduates

Indeed there is potential for:

- Existing companies in the marketplace to expand their operations
- New companies to establish themselves in the marketplace as the demand for environmental products and services increases
- Companies operating on the margins of the marketplace to diversify into environmental technology

Forecasts suggest that the number of people employed in environmental technologies companies in the West Midlands will increase from its current level of 22-29,000 to about 40,000 by 2010⁵.

⁵ Source: Skill needs for the West Midlands environmental technologies cluster - produced by ECOTEC, February 2004 (it should be noted that these forecasts take no account of the impact of the current economic downturn - phase 2 of the project will explore this in more detail).

3 Workforce profile

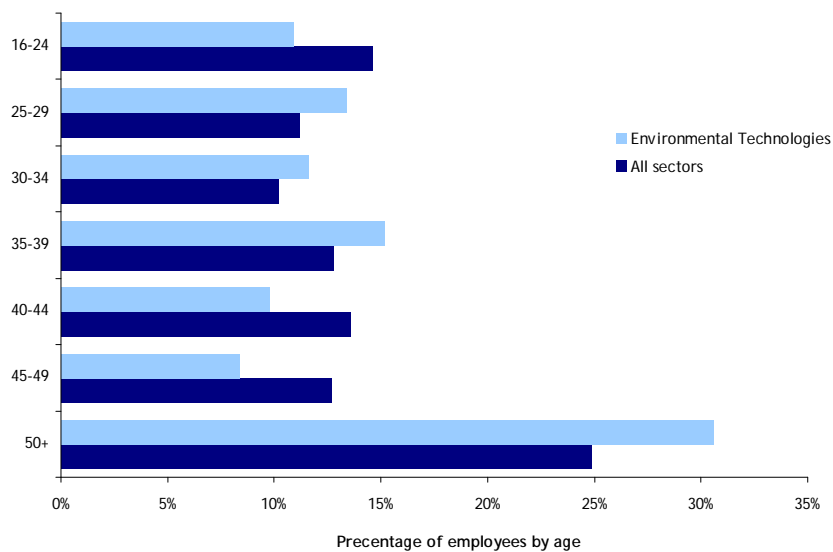
3.1 Occupations

The region’s environmental technologies workforce is dominated by staff in highly skilled professional occupations. All sub-sectors except waste management and waste water treatment have more than 60% of their staff in these occupations and the proportion rises to more than 70% in energy management, environmental monitoring, noise and vibration control and renewable energy⁶.

3.2 Employment by age and gender

Overall the region’s environmental technologies sector has an ageing and male-orientated workforce. As chart 2 shows more than 30% of the workforce were aged 50+ in 2008, which compares to a figure of just under 25% across all sectors.

Chart 2: Breakdown of employees in the West Midlands by age group, 2008



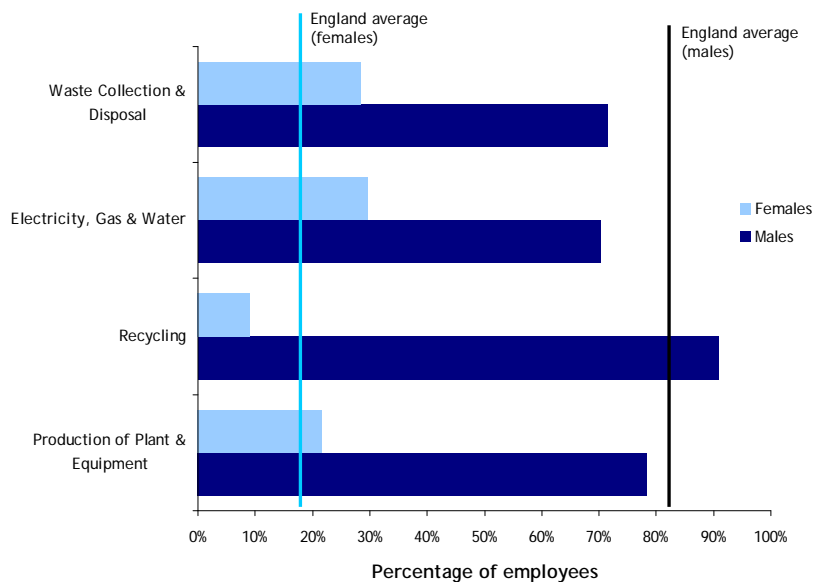
Source: LFS Apr-Jun 2008

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⁶ Source: Skills Needs for the West Midlands environmental technologies cluster - February 2004

The environmental technologies sector is also predominately male-orientated with females accounting for only 20% of the workforce⁷ and this figure falls to just 9% in recycling (see chart 3).

Chart 3: Percentage of employees by industry and gender, 2006



Source: ABI

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There are differences, however in the structure of the workforce by age and gender in different occupations:

- Graduates working in the sector are typically in the 25-40 age range and a significant number are women⁸
- Engineers, on the other hand, are predominantly white males in their 50s-60s and recruitment of younger people, women, or people from ethnic minorities to these occupations tends to be very limited
- In roles where there is a lot of travelling required such as asbestos surveying, employees tend to be younger with fewer family commitments

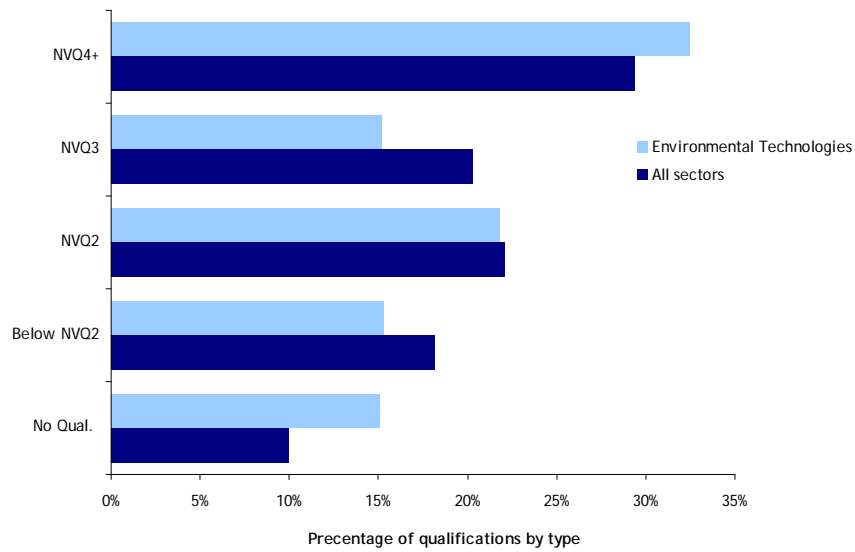
3.3 Qualification attainment

The region's Environmental Technologies sector has a relatively highly qualified workforce with nearly a third qualified to NVQ level 4+, well above the average for all sectors (see chart 6).

⁷ Source: ONS Annual Business Inquiry, 2006

⁸ Source: Skill Needs for the West Midlands environmental technologies cluster - February 2004

Chart 4: Qualification attainment in the West Midlands, 2008



Source: LFS Apr-Jun 2008

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Table 1 overleaf shows examples of occupations and the associated skills and qualifications required. There is significant variation between requirements in different industries. For example:

- Engineering consultancy firms are likely to employ people with higher level skills (i.e. degrees and second degrees)
- However, laboratory services and paper recycling companies tend to be looking for people with lower level/basic skills (i.e. good GCSEs)

Table 1: Examples of occupations, skills and qualifications in different types of business

Types of businesses	Types of occupation	Employee skills and qualifications
Engineering consultancy: contaminated land, landfill remediation, regulatory work	Environmental specialists, Engineers	Degrees and second degrees e.g. in chemistry, geology, hydrogeology, environmental science, environmental management
Energy and environment buildings services: energy surveys, environmental management systems, CHP, water advice	Engineers (mechanical, electrical) technicians, IT	Engineers (especially chartered)
Renewable energy consultancy: wind energy development	EIA researcher, landscape architects, compliance, graphics	Degrees and masters: Environmental chemistry, geology, landscape architecture, ecology, geography, EIA and environmental assessment
Laboratory: analytical services (soil, water, wastes)	Business development, laboratory managers, technicians, scientific officers	Environmental science graduates: non-graduates with sub-degree courses; good GCSE school leavers
Paper recycling	Management, supervisors, production operatives, drivers	Semi-skilled/basic skills

Source: Skill Needs for the West Midlands environmental technologies cluster - February 2004

4 Key developments in the sector, potential market opportunities and drivers of skills change

A number of factors are driving growth and skills change in environmental technologies.

4.1 Market drivers

- Public sector investment into, promotion of, more sustainable technologies, materials and ways of living.
- Legislation - to reduce carbon emissions.
- Social responsibility - with companies adopting environmental policies and performance indicators and pressure for 'responsible' businesses to limit their use of scarce resources.
- Consumer demand - for more sustainable business with low carbon footprints.
- The cost benefits of sustainable production.
- The reduction in landfill sites as people recycle more waste - leading to the development of alternative waste disposal options such as composting, recycling and energy recovery.
- Potential market opportunities in the coming years include fuel cells, renewable energy, low carbon technologies and emerging markets such as emissions trading.

4.2 Technology drivers

- Companies' desire to supply the best possible environmental technologies to customers
- The development of new environmental technologies which increase efficiency

International competition, which is resulting in UK companies looking to improve their products to drive up competitiveness

4.3 Emerging skill needs

These developments are creating a need for specific skill sets within the sector's workforce, for example⁹:

- Leadership and project management skills among both supervisory and more senior staff
- Improved contracting skills (e.g. procurement and contract management).
- Improved generic skills in areas such as team building, communication, product knowledge and management skills
- Greater health and safety awareness and good practice
- Improved environmental knowledge

Given that the workforce in many environmental technologies industries is ageing succession planning to attract more young people into the sector will be vital.

5 Current and potential labour and skill needs and any gaps and shortages

While it is evident that there are significant market opportunities for environmental technologies companies many lack the key skills and knowledge needed to capitalise on them to the full.

5.1 Skill gaps

Nearly 18% of environmental technologies companies in England as a whole highlighted skill gaps in the workforce 2007¹⁰. Many of these relate to specialist technical skills specific to the sector such as those relating to asbestos and geotechnical activity, engineering, electrical/electronic and control and instrumentation skills and expertise in new and emerging areas such as fuel cells.

Gaps in more generic/transferable skills are also common, for example in commercial awareness among graduates and in general business and sales skills across many occupations.

⁹ Source: Occupational and functional map of the UK Renewable energy sector published by EU Skills - December 2005

¹⁰ Source: LSC National Employer Skills Survey 2007 (only national level data is available due to limited sample sizes at regional level).

5.2 Skill shortages

At a national level environmental technologies companies report particular difficulties in recruiting people with the skills they require in areas such as:

- General management skills - and project and contract management skills in particular
- People with specialist environmental skills such as acoustic consultants, senior ecologists, waste management experts, geoenvironmental engineers and asbestos surveyors

6 Investment in training and upskilling by employers

A particularly high proportion of environmental technologies companies nationally (72% compared with 67% across all sectors in 2007) are active in providing training and development for their employees¹¹. The proportion that formally plan and fund training is lower than in many other sectors, however, and investment in training tends to take place as and when required:

- External training provision is used to address specific needs. Companies tend to use a mixture of external providers, including universities and FE colleges, with training delivered both on and off site¹².
- Internal training is usually less formal and includes knowledge sharing, induction for new recruits and specific on-the-job training provided by more experienced staff

Nearly two thirds of environmental technologies companies offer training leading to formal qualifications. These included degree level, specialist vocational and more generic work-based qualifications¹³

At a regional level there are a number of environmental technologies companies (across all sectors) working with providers to develop training courses. One consultancy, for example, works with Stoke on Trent College to develop risk assessment training for staff.

¹¹ Source: LSC National Skills Survey 2007

¹² Source: Skills Needs for the West Midlands environmental technologies cluster - February 2004

¹³ Source: Skills Needs for the West Midlands environmental technologies cluster - February 2004

6.1 Identifying training courses and barriers to participation

Companies tend to use a range of methods to source appropriate training, notably via word-of-mouth, post and journals, trade associations and the internet. A quarter of companies indicate that they find it difficult to source training courses, citing:

- The limited availability of courses locally
- The limited availability of courses nationally in emerging and specialist areas
- The limited availability of specific qualifications such as NVQ level 2 in general environmental skills
- A lack of awareness of what is available
- The prohibitive cost of many courses
- Courses not available especially in specialist areas or some techniques not yet recognised

Consultancies seem to be the most aware of, and proactive in, identifying training and development relevant to their industry¹⁴.

6.2 Satisfaction with training provision in the region

The overall perception of environmental technologies companies across the region is that training in the region is generally adequate but there are some issues. A number of companies highlight concerns with the content of HE and FE courses. While some have attempted to influence university and college curriculums, they tend to have had limited success so far. In particular:

- The availability of courses meeting companies' needs for basic and more specific IT training remains limited
- There is a lack of courses that meet the specific needs of particular environmental industries and companies serving niche markets (for example training in skills relating to the treatment of contaminated land or fuel cells)

¹⁴ Skills Needs for the West Midlands environmental technologies cluster - February 2004

6.3 Policy issues and actions

The following recommendations and actions to help environmental technologies to access the skills they need to develop and grow were outlined in the reports we have reviewed:

- Environmental science should be incorporated into the school curricula and school work experience placements to encourage young people to pursue a career in science and engineering
- Teachers should be provided with relevant information on the sector to help them provide appropriate careers advice for pupils. This could be done by AWM's environmental technologies cluster team for example.
- More should be done to raise awareness/establish links in schools, colleges and universities about the environmental technologies sector as a career opportunity. This could be done by LSC for example.
- NVQs that are tailored to the sector, and especially new and emerging markets, (e.g. fuel cells) should be developed.



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