

Liverpool City Region

The economic potential of the low carbon and environmental goods and services (LCEGS) sector.



ESTA



Environmental Sustainability
Technical Assistance

This briefing report provides an analysis of the low carbon and environmental goods and services (LCEGS) sector in [Liverpool City Region \(LCR\)](#). It shows the areas of comparative strengths and uses these to make recommendations to accelerate the growth of the sector across the city-region and identify opportunities for diversification into the sector.

The LCEGS sector in Liverpool City Region is made up of some 1,200+ companies that employ around 22,000 people and command sales worth more than £2.7 billion per year.

The LCEGS sector, also known as green or cleantech industries, has traditionally been difficult to define. The definition used in this briefing report intends to capture all economic activity across all sectors and supply chains that deal with all environmental issues ranging from traditional pollution clean-up and renewable energy to complex, emerging low carbon solutions. It uses the official BIS definition, which is designed to address the gap in the current Standard Industry Classification (SIC). It does not include the economic gains from businesses improving their resource and energy efficiency.

This report shows that 2% of England's LCEGS sales take place in Liverpool City Region. This indicates that Liverpool City Region is performing above its weight in this sector and is well placed to access the £3.4trillion global market opportunity. The LCEGS sector in Liverpool City Region is maintaining an annual growth rate of approximately 4% throughout the recession, helping to drive economic growth across the City Region.

The graphs produced in this report are based on 2011/12 and 2012/13 LCEGS data produced by kMatrix.

Low carbon and environmental goods and services (LCEGS) sector definition

In the strictest sense the low carbon and environmental goods and services (LCEGS) sector is not a ‘sector’ but a flexible construct or ‘umbrella’ term for capturing disparate low carbon, environmental and renewable energy activities spread across many existing sectors such as transport, construction and energy. The definition includes 2,800 product and service activities that derive from sector supply chain and value chain activities.

These are sub-divided into three broad categories (Level 1 sub-sectors) – Environmental, Renewable Energy and Low Carbon, which are then further defined using 24 categories (Level 2 sub-sectors) as shown in the table below. This is the same definition used by the UK Government to analyse the sector. The analysis for this report uses the Level 2 sub-sectors.

Level 0	Low carbon and environmental goods and services (LCEGS)		
Level 1	Environmental	Renewable Energy	Low Carbon
Level 2	Air pollution	Biomass	Additional energy sources
	Contaminated land	Geothermal	Alternative fuel/vehicle
	Energy management	Hydro	Alternative fuels
	Environmental consultancy	Photovoltaic	Building technologies
	Environmental monitoring	Wave and tidal	Carbon capture and storage
	Marine pollution control	Wind	Carbon finance
	Noise and vibration control	Renewable consulting	Nuclear power
	Recovery and recycling		
	Waste management		
	Water supply and waste water treatment		

SECTOR SPLIT

Figure 1: LCEGS Sales 2012/13 (£m)

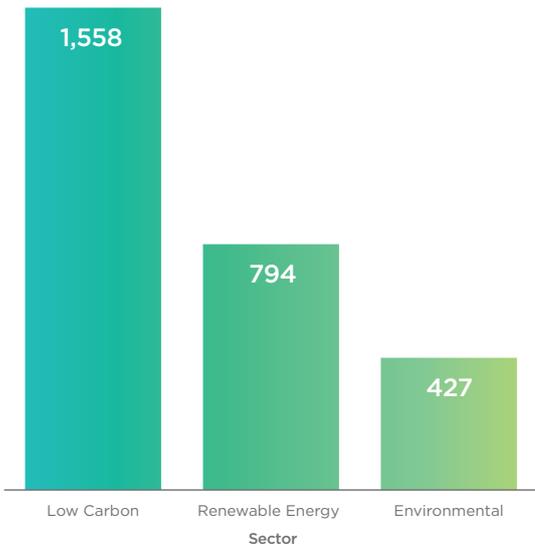


Figure 2: LCEGS employment 2012/13 (FTE)

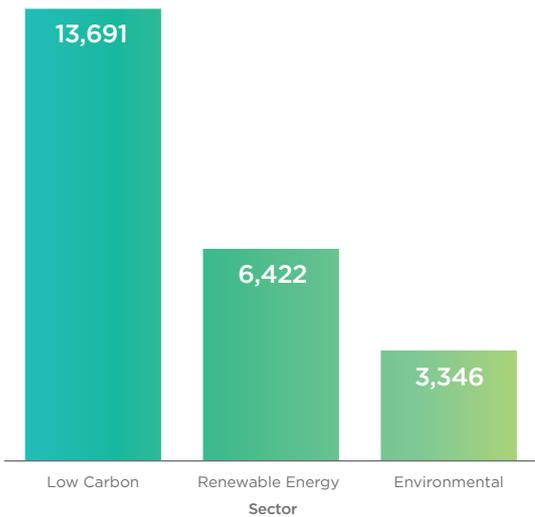
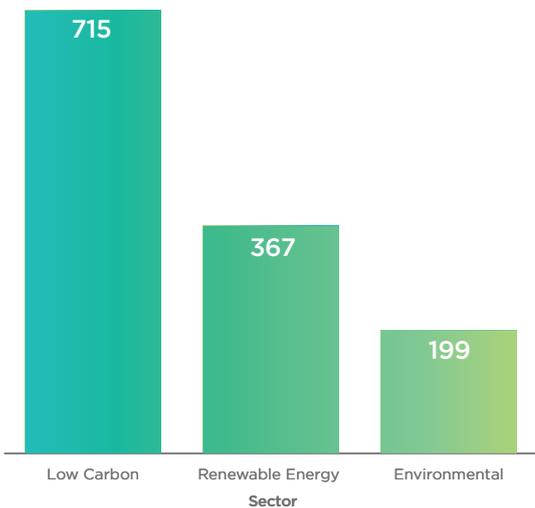


Figure 3: LCEGS companies 2012/13 (FTE)



Sales

LCEGS sales across Liverpool City Region are split across three Level 1 sub-sectors:

56% low carbon

28% renewable energy

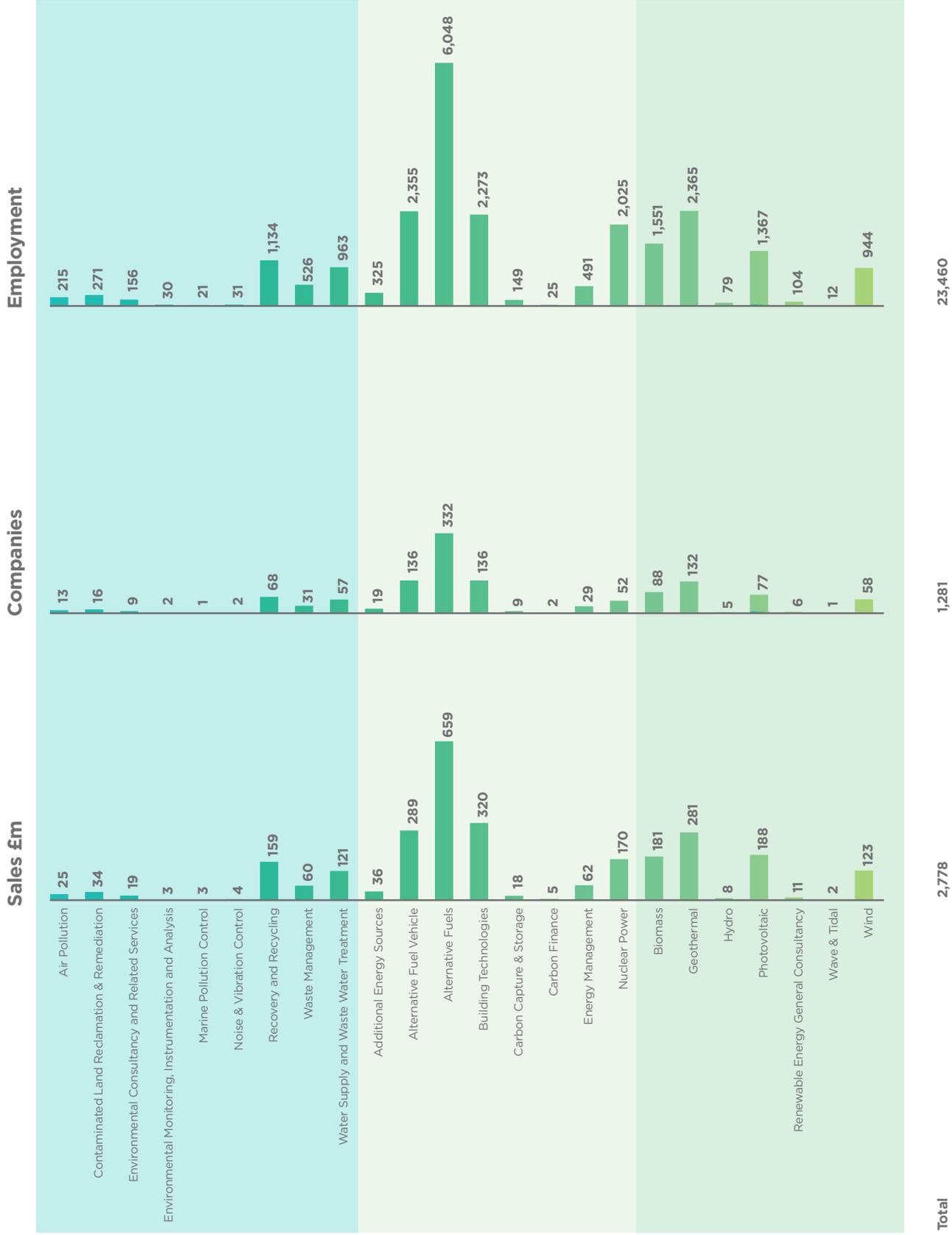
16% environmental

Employment

Employment in the LCEGS sector in Liverpool City Region is estimated to have been 23,460 FTE in 2012/13.

Companies

In total the number of LCEGS companies in Liverpool City Region was 1,281 in 2012/13.



Liverpool City Region has a broad spread of companies in Level 2 LCEGS sub-sectors with comparative strengths in the following areas:



Energy efficiency: building technologies and energy management



Alternative fuels and Alternative fuel vehicles



Wind



Renewable energy: PV, geothermal and biomass



Waste and recycling



Additional energy sources



Nuclear power



Professional technical services for the whole sector

Low carbon

This sub-sector is dominated by alternative fuels and alternative fuel vehicles, which together account for over 60% of low carbon sales. However, these sub-sectors comprise a high proportion of low value-added sales and distribution activities. The other dominant Level 2 sub-sectors in the low carbon sub-sector are building technologies and nuclear power.

Renewable energy

The geothermal sub-sector can be considered the strongest performing renewable energy sub-sector in Liverpool City Region. This sub-sector definition includes air and ground source heat pump manufacturing, installation and system design. Photovoltaic, biomass and wind sources also dominate the renewable energy sub-sector.

Environmental

Three, long established universal environmental sub-sectors account for 79% of sales, these being recovery and recycling, water supply and waste water and waste management.

There are a few gaps in presence across the sector, the data shows virtually no presence in marine pollution control and no presence in wave and tidal renewable energy.

2% of England's LCEGS Sales take place in Liverpool City Region

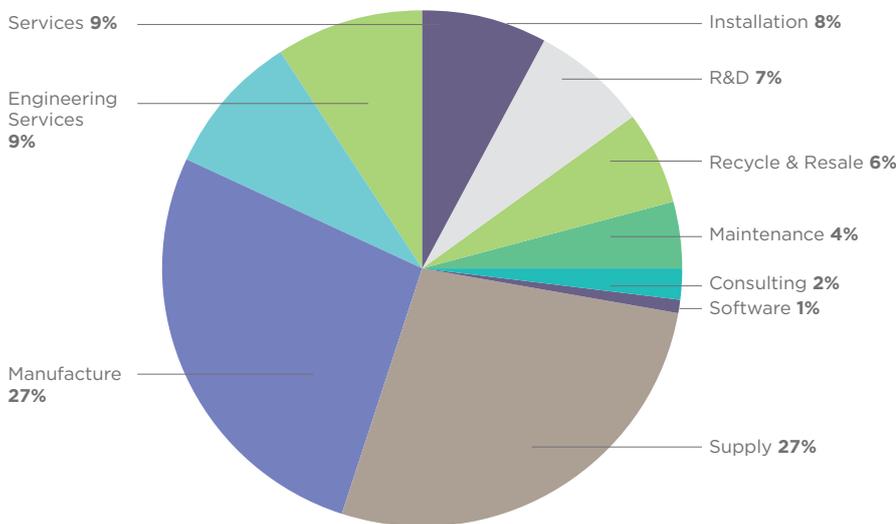
ACTIVITY TYPE

LCEGS sector activity in Liverpool City Region is split across several different activity types.

27%	Manufacturing
9%	Engineering Services
7%	R&D activity

Professional technical services (engineering, project management etc.) do not stand out as sub-sector on their own because they are embedded within a number of LCEGS sub sectors. However, they can be seen as a strength in Liverpool City Region, forming a core professional services competency.

Figure 5: Total LCEGS split by activity type (sales) – excluding 'Fuel Production' and 'Fuel Supply & Distribution'



EXPORTS

LCRs LCEGS exports grew by 2.7% between 2010/11 and 2011/12 to £271.3m

Compared with overall sector growth in the same period of 4%, this figure suggests that the sector is slightly underperforming in growth in exports (however, these export figures are an estimate based on regional export statistics, which are the best available).

The main exporting sub-sectors are photovoltaic, alternative fuels, geothermal, building technologies, biomass and water and waste water treatment.

The sub-sectors where Liverpool City Region has a greater than average share of UK exports are nuclear power (4.9%), photovoltaic (3.5%), carbon capture and storage (3.4%) and biomass (3.4%).

GROWTH POTENTIAL

The sector's sales growth rates in Liverpool City Region outperformed the UK economy throughout the recession. The LCEGS sector in Liverpool City Region grew by 4.5% in 2012/13 and it is predicted to continue to grow.

The rate of sales growth varies between the different sub-sectors. In general the renewable energy and low carbon sub-sectors are the fastest growing with more steady growth rates in the environmental sub-sector.

The growth in sales is not mirrored by an equivalent growth in employment. This has been a feature of the LCEGS sector across the UK since 2008/09 and is not restricted to Liverpool City Region. This is to be expected. In the current economic situation, many companies are still recovering from the economic shock of 2007/08 and are currently working at comparatively low productivity levels, thus able to absorb growth within their current workforces. Likewise, new company formations are replacing company failures in the sector. Until the general economy starts to grow this is likely to remain the case, in spite of market growth.

4.5% Growth rate
of LCEGS sector
in Liverpool City
Region 2012/13

Figure 6: Sales Growth Rates

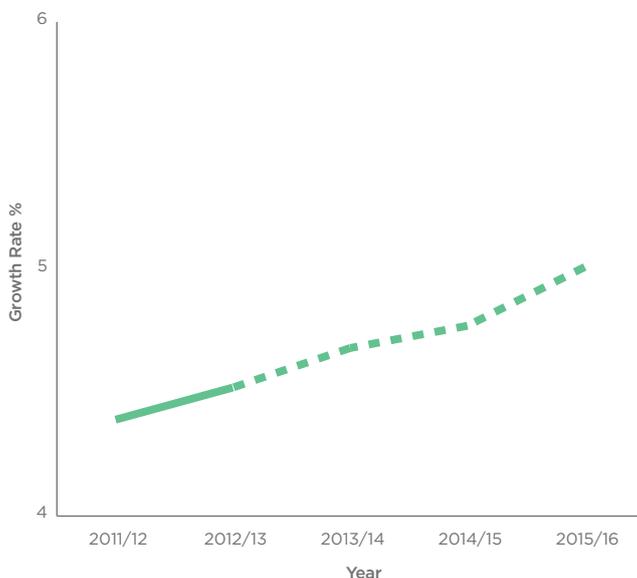
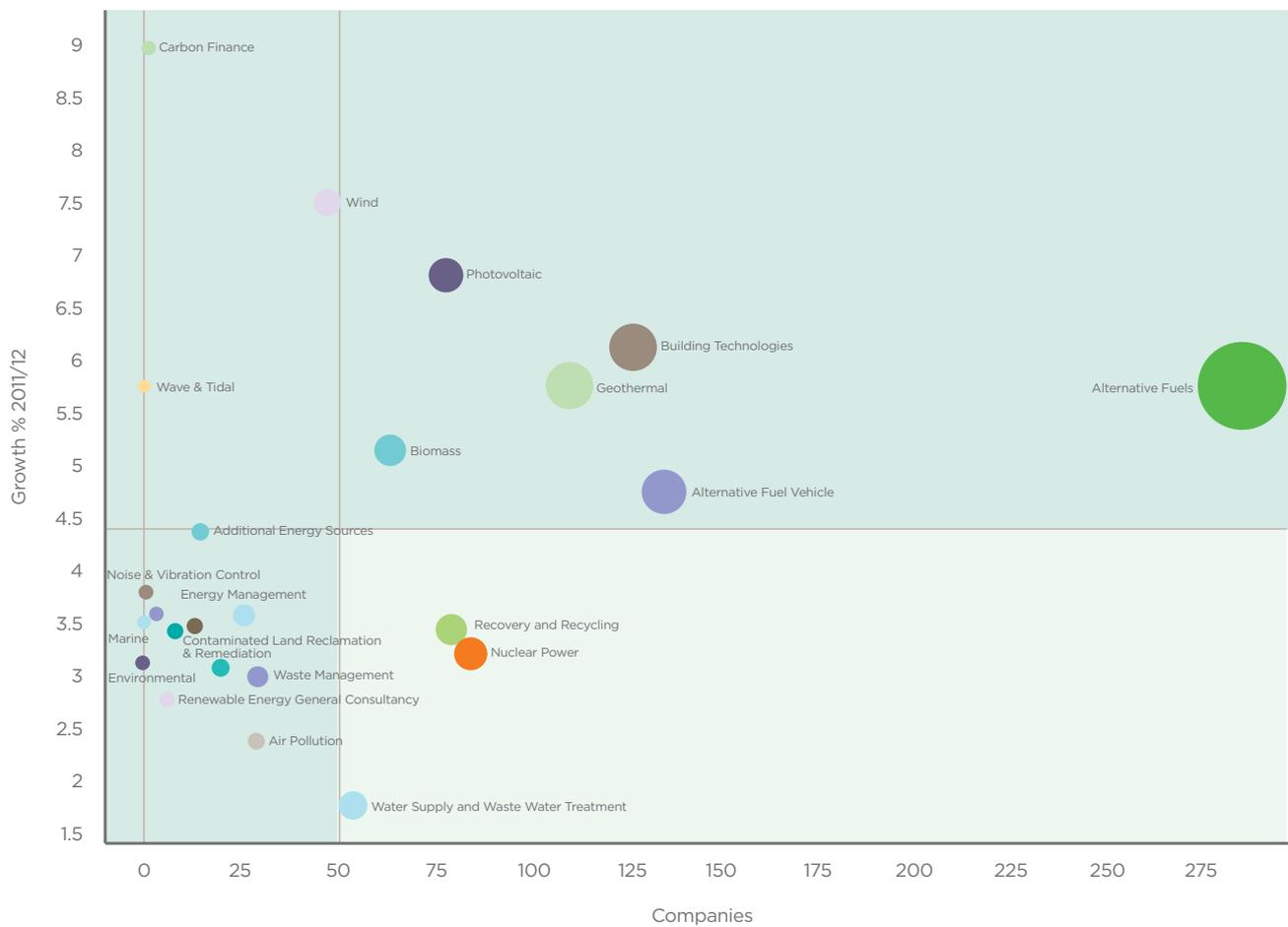


Figure 7 shows a 3D analysis of the Level 2 sub-sectors for Liverpool City Region, plotting growth percentage along the vertical axis, number of companies along the horizontal axis and sales reflected in the size of the bubbles.

Figure 7: Liverpool City Region LCEGS 3D Analysis - growth, companies and sales



This graphs shows that Liverpool City Region’s key strengths are in the following sub-sectors:

- Building technologies**
- Geothermal**
- Photovoltaic**
- (Alternative Fuels and Alternative Fuel Vehicles¹)**

Other key high growth market sub-sectors with possible potential for inward investment and diversification strategies include:

- Biomass**
- Geothermal**
- Wind**
- Nuclear**
- Recovery and recycling**

¹the alternative fuels and alternative fuel vehicles sub-sectors comprise a high proportion of low value-added distribution, wholesale and retail activities

UK COMPARISON

The graph below shows how the growth rates in Liverpool City Region compare to the UK in each Level 2 sub-sector. Those above the line are performing better in Liverpool City Region than the national average.

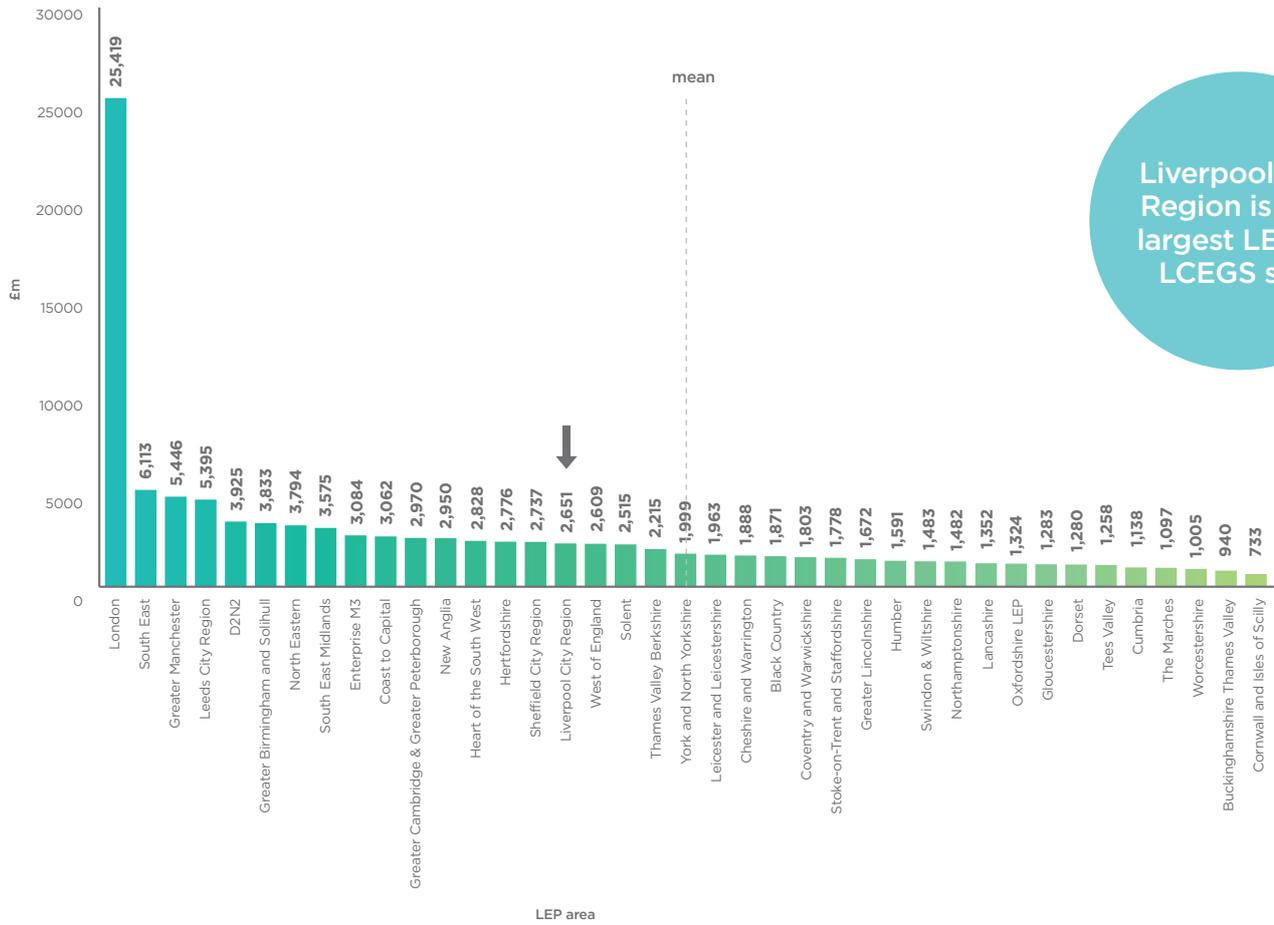
Liverpool City Region's growth was better than the UK average in a number of sectors, significantly in building technologies, geothermal, environmental consultancy, additional energy sources, photovoltaic and wind sub-sectors.

Liverpool City Region's share of the LCEGS sector sales ranking is better than its GVA ranking in England. It can be implied that Liverpool City Region performs above its weight in terms of LCEGS sector presence compared with its general economy (see GVA rankings graph on the page opposite).

Figure 8: Growth Variance: LCR vs UK %

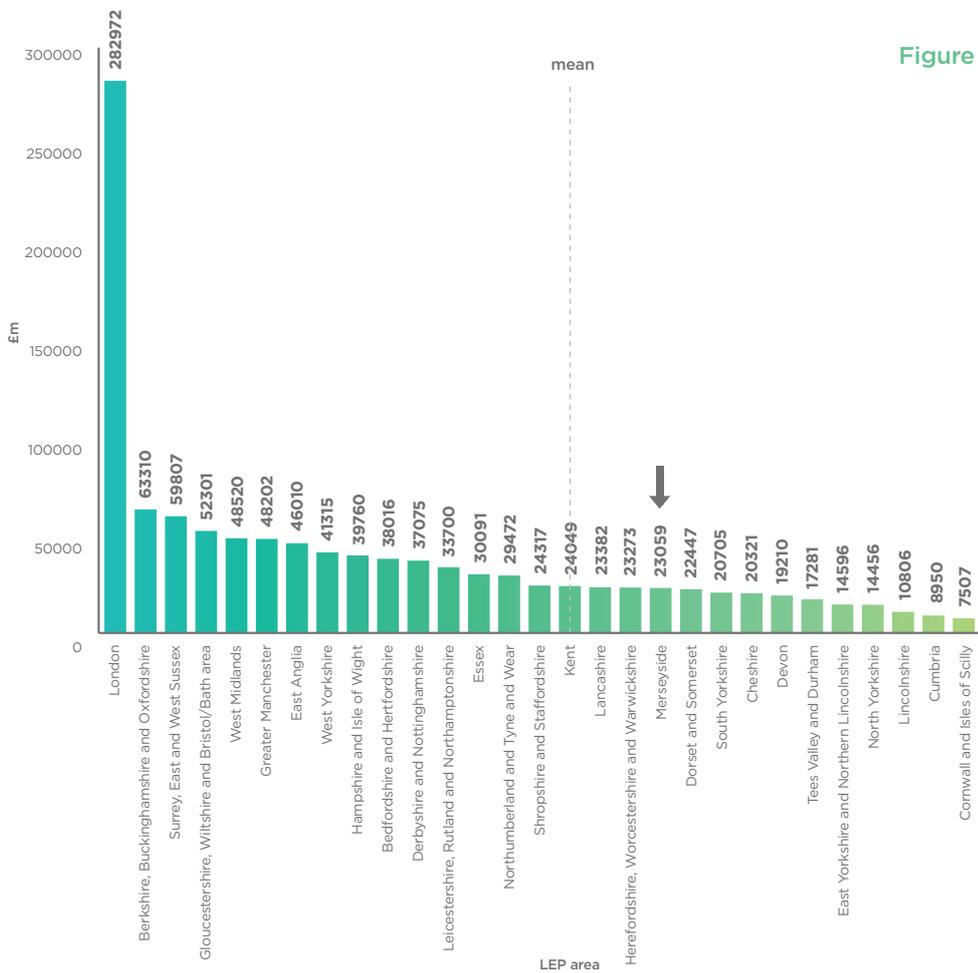


Figure 9: LEP Ranking for LCEGS Sector Sales



Liverpool City Region is 16th largest LEP by LCEGS sale

Figure 10: GVA ranking of English LEPs



Merseyside ranked 19th largest LEP by GVA

UK COMPARISON LCEGS BY LOCAL AUTHORITY

The following graphs compare the total LCEGS sales, employment and company count for each Local Authority in Liverpool City Region. Liverpool has the highest figures with Wirral, Halton and St Helens on a par behind, followed by Sefton and Knowsley.

Figure 11: Local Authorities compared by Sales

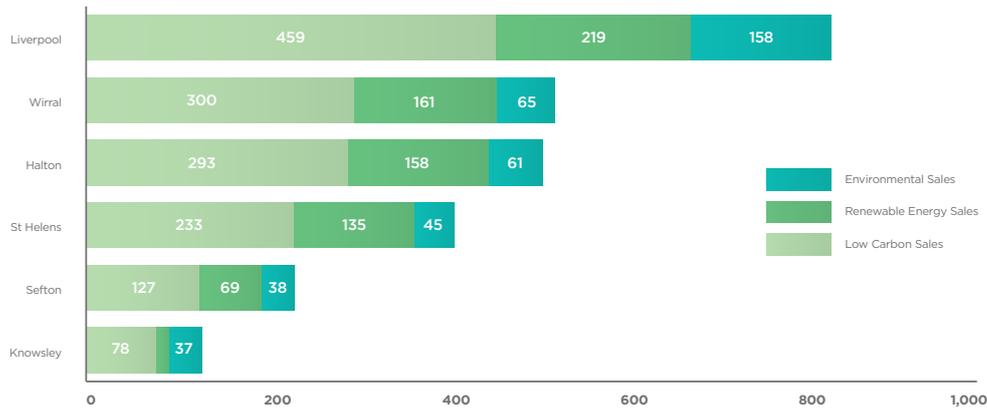


Figure 12: Local Authorities compared by Employment

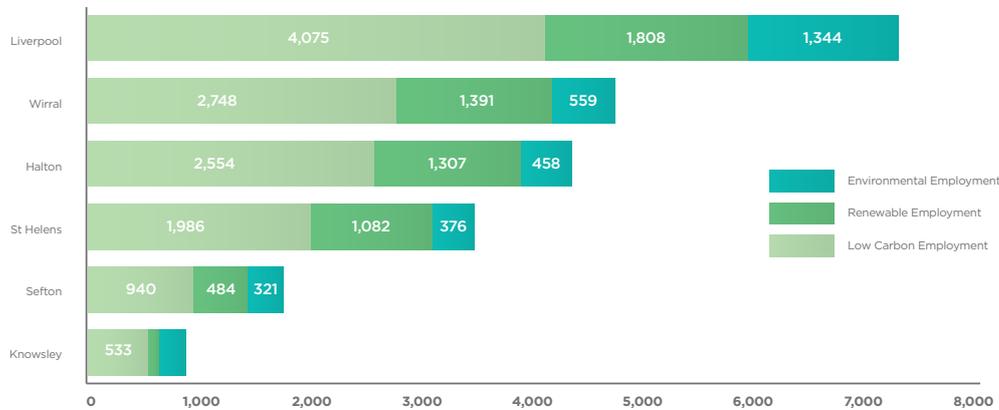
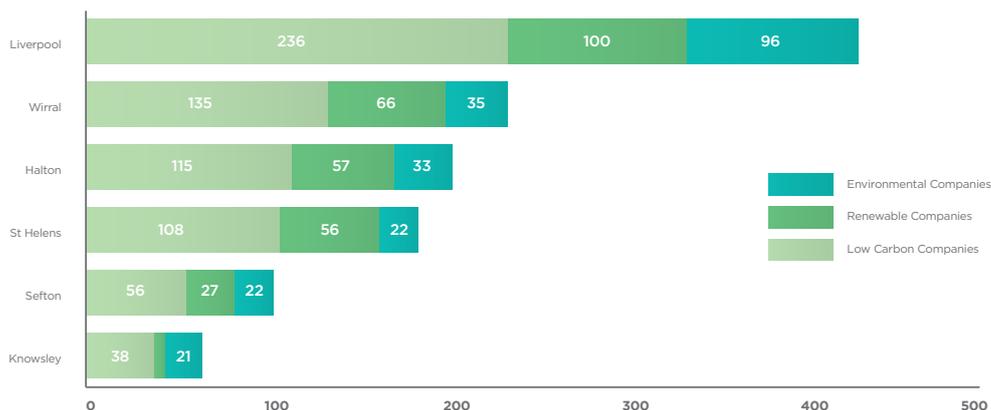


Figure 13: Local Authorities compared by Companies



IN-DEPTH ANALYSIS OF LIVERPOOL CITY REGION'S COMPARATIVE STRENGTHS

This section uses the data to provide an in-depth analysis of the comparative strengths in Liverpool City Region's LCEGS sector. It provides an insight into the characteristics of the sector and informs the recommendations for developing the sector.

Energy efficiency: building technologies and energy management

In the **energy efficiency** sectors there is a large number of SMEs, consultants, assessors and installers, which are complemented by the larger engineering and consultancy businesses, who are also active in this market. It consists of the building technologies and energy management sub-sectors.

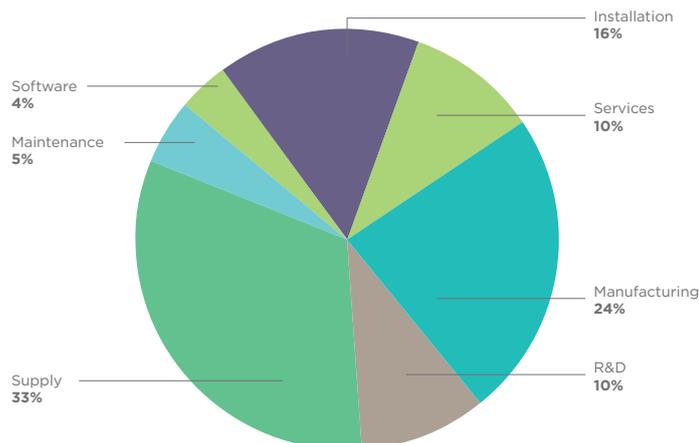
The **building technologies** sub-sector includes mainstream building materials and systems that contribute to reduced energy use and to lowering the carbon footprint of buildings. It includes:

- Doors
- Insulation and heat retention materials
- Monitoring and control systems
- Windows

The **energy management** sub-sector includes energy saving and power management activities for industrial and domestic use. It includes:

- Consulting and other services
- Electrical
- Gas supply
- Heating and ventilation
- Lighting
- R&D into high efficiency lighting, heating and ventilation, power, equipment and pumps, and advanced management systems.

Energy efficiency activity type (% of sales)



Market drivers

- Green Deal and ECO
- Increasing cost of energy for businesses and households
- Volatility of energy prices making it difficult for business to plan
- Building regulations for new builds

Total sales	£341m
Number of companies	154
FTE jobs	2,679

Wind

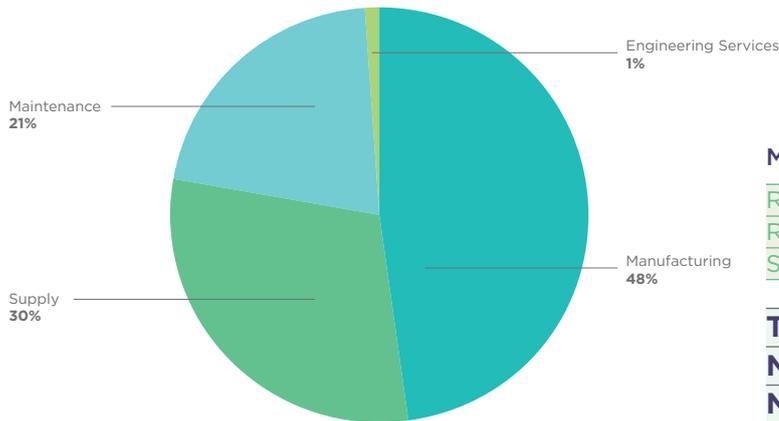
In the **wind sector** there are companies involved in the supply chains for both wind turbine manufacture and onshore and offshore wind farm development.

The **wind energy** sub-sector includes all activities that convert wind power into usable energy including wind farm systems, large and small wind turbines.

The sub-sector is divided by size of turbine rather than location (onshore and offshore) because it is easier to differentiate and map supply chain activities in this way. It includes:

Large wind turbines
Small wind turbines
Wind farm systems

Wind activity type (% of sales)



Market drivers

Renewable energy targets at a UK and EU level.
Renewable Obligation Certificates
Security of supply

Total sales	£120m
Number of companies	48
Number of staff	887

Renewable energy: pv, geothermal, biomass

In the **renewable energy** sub-sector, there are more than 100 Green Deal or MCS (Microgeneration Certification System) accredited companies.

The **photovoltaic energy** sub-sector covers all activities that help to convert solar radiation into useable energy. It includes:

Chemicals
Other equipment and chemicals
Photovoltaic cells
Systems and equipment
R&D

The **biomass energy** sub-sector includes all activities that convert biomass into energy but excludes biomass materials (which are counted under the alternative fuels sub-sector). It includes:

Biomass boilers and related systems
Biomass energy systems
Biomass furnace systems
Manufacture of biomass boilers and systems
Technical and operational consulting

The **geothermal energy** sub-sector includes all activities relating to the extraction and use of heat generated from the earth. It includes:

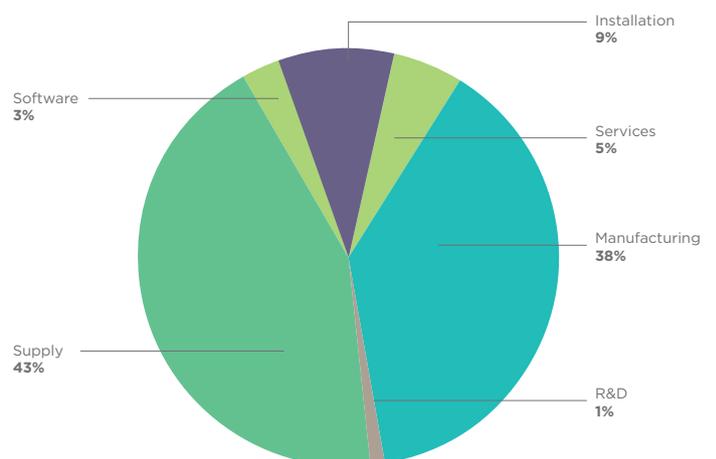
Component design and research
Consulting and related services
Manufacture and supply of specialist thermally enhanced equipment
Whole systems manufacture and supply for industrial, residential and community geothermal energy applications

Market drivers

Feed-in Tariff (FiTs) and Renewable Heat Incentive (RHI)
Increasing cost of energy to businesses and households

Total sales	£614m
Number of companies	254
Number of staff	5,091

Renewable energy activity type (% of sales)





Water supply and waste water treatment

The **water supply and waste water treatment** sub-sector includes activities relating to the treatment of pollutants in the water supply. It includes:

Water treatment and distribution, manufacture, supply, installation and maintenance of systems

Engineering

R&D

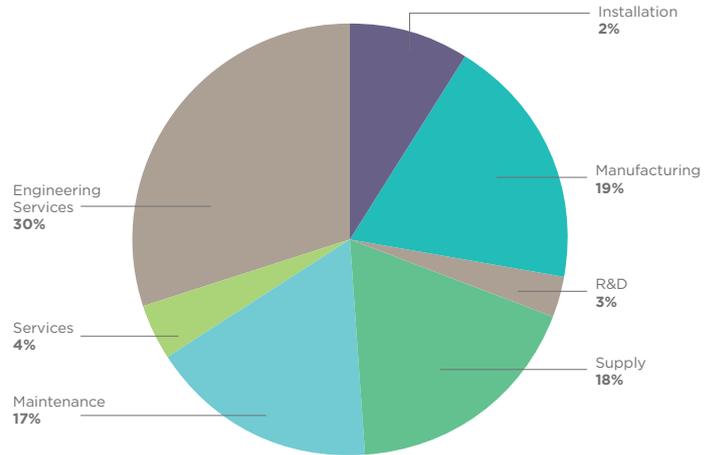
Consulting and training

Market drivers

Reliable supply of clean and usable freshwater

Total sales	£113m
Number of companies	55
Number of staff	962

Water supply and waste water treatment sector activity type (% of sales)



Recycling and waste management

The **waste and recycling** sector has a number of specialist and innovative companies active in this market. Whilst much restructuring of the industry has taken place over the past decade (changing the industry towards a resource management focus, as opposed to a logistics focus on moving waste to landfill) there is still much to be done in terms of capitalising on resource re-use. This includes integration of waste management and recovery and recycling with energy generation, energy from waste and anaerobic digestion.

The **recovery and recycling** sub-sector includes all activities relating to the collection and processing of domestic and industrial waste products. This includes:

Engineering and equipment

R&D

Recycling stock

Waste collection

The **waste management** sub-sector includes the treatment/management of domestic and industrial waste that cannot otherwise be recycled. It includes:

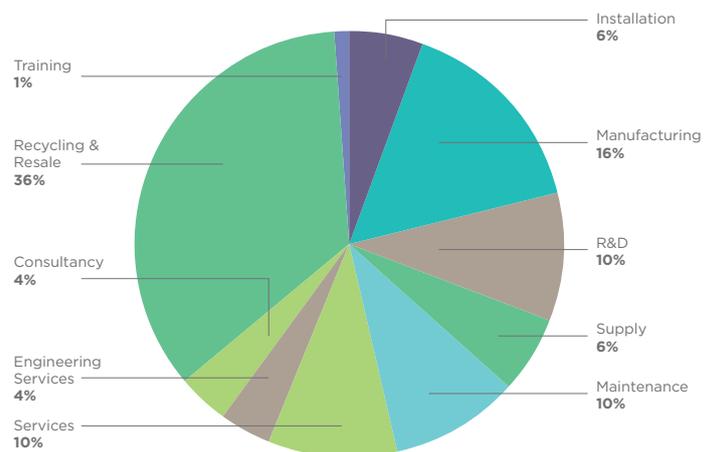
Construction and operation of waste treatment facilities

Consultancy and training

Equipment for waste treatment

R&D

Waste and recycling sector activity type (% of sales)



Market drivers

Landfill tax/cost of waste disposal

Recycling targets

Cost of raw materials

Scarcity of raw materials

Total sales	£209m
Number of companies	110
Number of staff	1,626

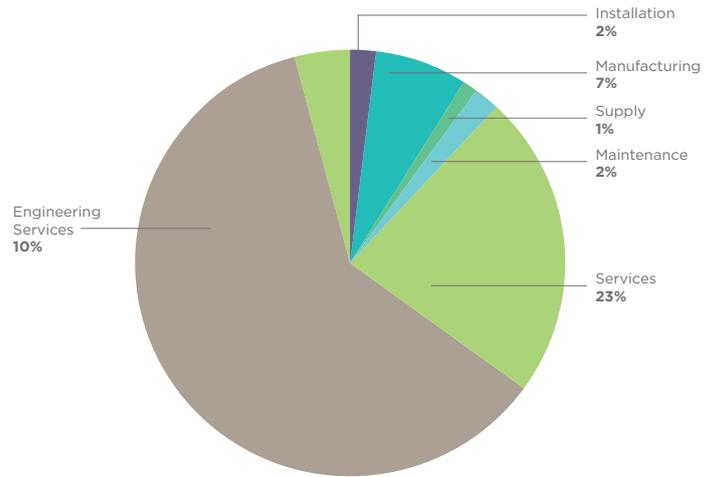


Nuclear power

With a presence in higher growth markets, the **nuclear power** sub-sectors are worthy of note for Liverpool City Region.

The **nuclear power** sub-sector includes all activities that relate to the generation of nuclear power, excluding decommissioning of nuclear sites. It includes:

- _____ Nuclear safety engineering services, regulatory compliance, reactor management, fail-to-safety engineering
- _____ Nuclear power plant operations management, engineering and PR
- _____ Nuclear cooling equipment
- _____ Construction of plant and equipment
- _____ Commissioning engineering services
- _____ Sampling & testing service
- _____ Nuclear scientific services



Market drivers

- _____ Security of supply
- _____ Increasing cost of energy
- _____ Renewable energy targets

Total sales	£175m
Number of companies	85
Number of staff	1,675

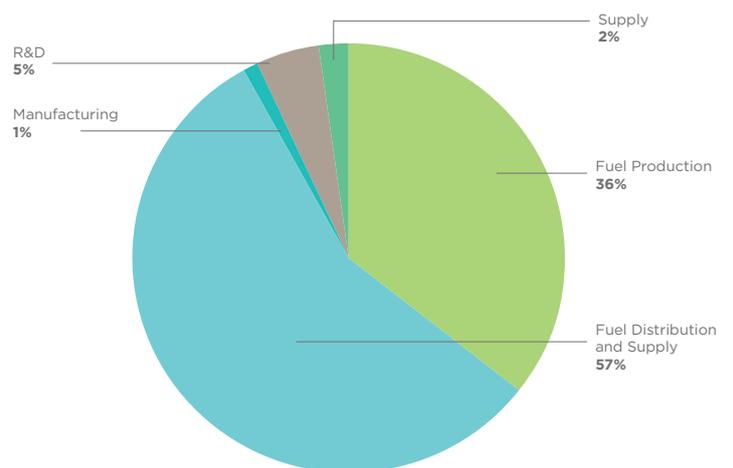


Alternative fuel and Alternative fuel vehicles

The **alternative fuel and vehicles** sub-sector includes low carbon fuel and technology activities that relate to (predominantly) automotive transport. It is divided into Alternative Fuels (mainstream) and Other Fuels and Vehicles. It includes:

- _____ Production, supply and distribution of natural gas (compressed or liquefied), synthetic fuel and auto gas (LPG, LP Gas or Propane)
- _____ Vehicle fuels and technologies that are still at an early stage
- _____ Research, Design, Development and prototyping activities for; hydrogen fuel cells and hydrogen internal combustion, electric, hybrid electric, steam powered, organic waste fuel, wood gas, solar powered and air, spring and wind powered vehicles.

Alternative fuel and Alternative fuel vehicles sector activity type (% of sales)



The **alternative fuels** sub-sector includes a wide range of low(er) carbon fuel sources that are not included under Renewable Energy. It includes the manufacture, production, supply and distribution of:

- _____ Batteries
- _____ Bio-fuels for vehicles
- _____ Mainstream bio-fuel applications (non-transport)
- _____ Other bio-fuels - biomass, methane, peanut oil, vegetable oil, wood and woodgas
- _____ Other fuels - hydrogen

Market drivers

- _____ Cost of conventional fuels
- _____ Security of supply

Total sales	£915m
Number of companies	423
Number of staff	7,990

CASE STUDIES

These company case studies provide an illustration of how three Liverpool City Region companies are taking advantage of the LCEGS markets.



Low carbon

Wirral based **Mole Group Ltd** specialises in moling technology for commercial and domestic underground installations in the UK. The company diversified into energy efficiency through the development of a range of “green” products, including the award-winning CombiSave device, an innovation developed by the company’s Managing Director, David Furlong.

Combisave is a thermostatically controlled valve that is fitted to the outlet pipe of a combination boiler. When the hot tap is turned on, it reduces the flow of water until it has reached a set temperature. By controlling the flow of water during the initial firing process, Combisave accelerates the heating of water and reduces the amount of fuel needed in the process. The product will save an average of 8 litres of water every time the tap is turned on from cold. It is suitable for retrofit or for integrating into

new combination boilers.

CombiSave has won several awards, including Business Innovation Award at E3 Business Awards in 2013 and Consumer Benefit Award at the UK Energy Innovation Awards 2010. It is a Water Regulations Advisory Scheme (WRAS) approved product and is recommended by Waterwise.

Two of the big six energy suppliers install CombiSave valves and it is stocked by numerous plumbers’ merchants.

The Intellectual property rights for CombiSave are held by Furlong Innovations, the innovation arm of Mole Engineering. The product is manufactured by Teddington Group in St Austell.



Renewable energy

Aintree based **Northern Solar** designs, installs and commissions both small scale domestic and large scale commercial solar PV installations systems, tailored to individual needs across the North West of England and Wales. It was the first Microgeneration Certification Scheme accredited installer of solar PV in Merseyside.

Northern Solar holds membership of the Real Assurance Scheme and NECIEC and is an associate installer of one of the biggest PV companies in the UK, Solar Century.

In 2012 the company diversified to create Green Deal Northern (GDN), a consortium of Green Deal-certified local energy efficiency assessors, installers and finance providers offering a complete service to customers taking advantage of the opportunities presented by the Government’s Green Deal legislation.

Through Green Deal Northern, Northern Solar now has a larger network of business partners referring Solar PV installation work to them.



Environmental

Avanti Environmental, based in Knowsley is one of the UKs largest waste management companies offering a range of services to commercial and industrial clients across the UK.

Avanti’s service offering has grown as a result of a number of successful acquisitions which now allow the company to accept, manage and treat a range of waste streams, including plastics and other forms of packaging, liquid waste, hazardous waste, automotive waste and energy from waste (via Trans Frontier Shipment Recovery).

Avanti has made significant investments in advanced recycling and reprocessing equipment to increase the capacity, efficiency and quality of their plastic recycling operations. The company can now treat over 26,000 tonnes of plastic (packaging and automotive waste) per year at their Knowsley site.

Avanti , in partnership with ICI Dulux, has developed an innovative technology installed at the Knowsley site. The technology enables the recycling of used paint cans and subsequent reprocessing of the material into a quality product suitable for re-manufacture, thereby closing the loop.

Dulux estimates that approximately 500,000 paint cans per year could be removed from landfill if recovered through this route.

RECOMMENDATIONS

The LCEGS sector has the potential to drive economic growth across Liverpool City Region. Support from the Local Enterprise Partnership and Local Authorities across the City Region can harness this potential and maximise the impact.

The recommendations are a series of actions that could be undertaken to support growth in the LCEGS sector.

1. Sector development support

Support companies in the sub-sectors where Liverpool City Region has comparative strengths that align with the highest growth rates: building technologies, renewable energy (wind, geothermal, biomass, PV)

Support could be targeted both at companies already supplying these industries and also those with the potential to diversify, most likely to be from the engineering, manufacturing and professional services sectors.

Example of how this could be delivered

Establishment of networking opportunities to maintain and develop contacts, provide market information, provide advice for expansion into new markets and build links across supply chains e.g. Wind Supply Network, Green Deal Network, Professional Technical Services Network.

Investigation and support for the LCEGS manufacturing industries in Liverpool City Region to understand their capabilities and needs and to promote these capabilities to each other, encouraging collaboration.

2. Market development support

Localised support to create and drive demand for local low carbon and environmental capabilities.

Example of how this could be delivered

Marketing the credentials of local companies, demonstrating low carbon technologies, maximising international trade opportunities to drive export markets and appropriate use of public sector procurement to encourage the development of the local supply chain.

3. Innovation support to exploit new market opportunities

Innovation support to evolve products and services to maintain their competitive position and to exploit new market opportunities.

Example of how this could be delivered

Establishment of a fund for low carbon and environmental research, development and deployment, promotion and encouragement of collaboration between universities and businesses.

THE RESEARCHERS AND ESTA

About the Researchers

This briefing report is based on research commissioned by the ESTA project and produced by kMatrix Data Services and Gyron LLP. The data used for the research is based upon kMatrix's work for UK Government, UK regions and UK Investors. This data has been used extensively since 2007/08 as part of the UK Low Carbon and Green Job agendas and has been reported annually by BIS since 2008/09 as the Low Carbon Environmental Goods and Services (LCEGS) sector. The data in this report is for fiscal years 2010/11 and 2011/12. This data was combined with Gyron's empirical approach to building evidence of companies active in the sector based on over 45 years combined experience of working in the low carbon, energy and environmental industries.

For more information visit
www.kmatrix.org
www.gyronllp.co.uk

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This information is provided to help the client identify opportunities in current and future Low Carbon Environmental Goods and Services (LCEGS) markets.

It does not constitute advice to the client as to what they should do, when, where or with whom.

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About ESTA

The Environmental Sustainability Technical Assistance (ESTA) project is funded by the Environment Agency (EA) and ERDF to support the five North West LEP areas to embed environmental sustainability into their economic development priorities and work streams; it runs from April 2012 to December 2014.

This briefing report has been produced by the ESTA project to communicate the findings of research commissioned and interpreted by the project.

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