



Department
for Business
Innovation & Skills

**LOW CARBON ENVIRONMENTAL
GOODS AND SERVICES (LCEGS)**

Report for 2011/12

JULY 2013

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1. Introduction

This report updates the data available on the Low Carbon Environmental Goods and Services (LCEGS) sector for 2011/12 and is the fifth annual assessment of this sector. The report was prepared with the support of, and contributions from, BIS, DECC and Defra.

The focus of this report is UK LCEGS performance in 2011/12, but to achieve this comparisons are made with baseline figures from 2008/09 to 2010/11 and benchmark comparisons are made with other leading global economies. The analysis is quantitative rather than qualitative, emphasising what we believe “is” rather than what it means. The enrichment process of adding context and meaning to the data is quite rightly the prerogative of the industry and its specialist representatives.

The methodology for this study is both traditional and innovatory. It is traditional in that it focuses on key measures of economic performance- sales, growth, companies, employment, importing and exporting- but innovatory in how the evidence base has been assembled and assessed from a very wide variety of public, private, academic, institutional and industrial sources looking forward over a five year period.

The research data is global and detailed, with measurement of approximately 2800 different goods and services included. The data is also hierarchically structured which means that analysis can be conducted at global, national, regional and sub regional level and products and services can be disaggregated into a number of different levels of detail, although much of this is summarised at the sub sector level.

The main purpose of the report is to create an ongoing analytical baseline for the LCEGS sector and its performance. Global data can be used to identify potential new markets, growth forecasts and export trends can be used to identify emerging markets, export trends and international trends. To this end, the report has been structured to start with an assessment of global markets, followed by UK and regional performances, import and finally export markets.

2. Methodology

2.1 Sector Definition

The definition of the LCEGS sector is the result of six years' work with UK National and regional government and UK industry organisations. The definition was designed to fill the gap in current Standard Industry Classification (SIC) codes that has resulted in activities in this area of the economy being consistently over-looked and under-valued. It has also allowed the UK public sector to report, monitor and develop LCEGS.

The definition is broad and includes activities that may appear under the overlapping headings of Environmental, Eco, Renewables, Sustainable, Clean Tech, Low Carbon or No Carbon. It has drawn on definitions from the US, Europe and further afield. It is constantly evolving and changing shape as new activities are identified, reach the market or are assigned one of the above labels. In the strictest sense it is not a "sector" but a flexible construct or "umbrella" term for capturing a range of activities spread across many existing sectors like transport, construction, energy etc, but with a common purpose - to reduce environmental impact.

It is also an inclusive definition in that, with the 2800 activity headings, we include both supply chain activities (componentry & assemblies) and value chain activities (R&D, Supply & Training). A glossary of economic activities included for each sub sector of LCEGS is included at Appendix A.

The sector has been defined using 24 sub sectors (Level 2 markets). These are sub-divided into three broad categories - Environmental, Renewable Energy and Low Carbon - the addition of each broadly mapping the evolution of the current LCEGS sector definition from its Environmental roots:

Environmental	Renewable Energy	Low Carbon
<ul style="list-style-type: none">• Air Pollution• Contaminated Land• Environmental Consultancy• Environmental Monitoring• Marine Pollution Control• Noise & Vibration Control• Recovery and Recycling• Waste Management• Water Supply and Waste Water Treatment	<ul style="list-style-type: none">• Biomass• Geothermal• Hydro• Photovoltaic• Wave & Tidal• Wind• Renewable Consulting	<ul style="list-style-type: none">• Additional Energy Sources• Alternative Fuel/ Vehicle• Alternative Fuels• Building Technologies• Energy Management• Carbon Capture & Storage• Carbon Finance• Nuclear Power

In turn, these 24 Level 2 markets have been divided into 119 sub sub sectors (Level 3 markets). Most of the analysis in this report is conducted using Level 2 or Level 3 data. Level 3 markets have been sub divided further, creating a total of 791 discrete

economic activities (Level 4 markets) for further and future analysis. These, in turn, have been sub divided into the total of approximately 2800 activities. Data up to level 2 is available in this report.

The definition is designed to provide a baseline for the sector from which future changes and developments can be measured. Given the evolving nature of LCEGS it is likely that new activities and revised definitions of the sector will appear over time.

2.2 Included Activities

The activities included under each of these headings vary according to the structure of the industry/ sub sector. The approach is inclusive (rather than specialist) and captures as much of the LCEGS sector Value Chain and Supply Chain activity as possible. The activities that we have included are: - design/ development, manufacture, supply, distribution, construction, installation, maintenance, operations, R&D, Consultancy, support services and retail.

As well as capturing as broad a cross-section as possible of the LCEGS Value Chain, activities are captured for companies that are specialist to the LCEGS Sector and also companies that are non- specialist but operate within the LCEGS supply chain. The analysis, therefore, includes:

- Companies that solely provide LCEGS products and services (anywhere in the Value Chain)
- Companies who are 100% providers of components or inputs into sub assemblies or final LCEGS products and services delivered by others
- Companies who (amongst other activities) provide components or inputs into sub assemblies or final assemblies of LCEGS products and services.

The threshold for including a company in the analysis is if at least 20% of estimated sales activity can be attributed to the LCEGS Sector (as defined within this report). In the case of larger companies this can often be extracted from financial reports, cross referenced to industry sources. For much smaller companies we may have to extrapolate the percentage of sales based on product range and turnover, tempered by more detailed case materials that we hold about the market performance of similar businesses. The exception to this 20% rule is for large companies (greater than £50m turnover) where a small proportion of overall sales is a significant contribution to the UK LCEGS sector.

While this is not an exact science, it is considered a robust methodology for calculating the size and distribution of supply chain activity across a sector. However, because the methodology is not based solely on historical SIC listings etc. it does mean that estimates of Sales Value, Company numbers and Employment may be higher than more traditional estimates because more supply chain and value chain activities are included in the sector definition.

The threshold for inclusion (>20% of company sales) in this report means that the company numbers and employment figures published in the following sections of this report focus upon the significant value - creating “core” of the LCEGS sector. This core is where true economic value is measured and this focus avoids (as far as is possible) any double counting of sales value within the supply chain. This threshold helps to maintain an overall relationship between sales, companies and employment that can be compared year-on-year both internally and with other countries. It also provides a standard and consistent measure that can be compared with other sectors.

2.3 Levels of Analysis

The data model for the LCEGS Sector is built bottom-up. This means that economic activities are identified at the lowest possible level of analysis (at the equivalent of a six or seven digit SIC code) and then aggregated together so that they can be reported upon more conveniently. In this report we record LCEGS Sector activities at five hierarchical levels but analyse the data at Levels 1 (Sector), 2 (Sub Sector) and 3 (Sub Sub Sector) only.

Each Level of detail has its own analytical benefits and in this report Level 1 is used to select the Top 53 global countries and for sub national analysis, Level 2 for identifying market growth trends and Level 3 for analysing national and regional LCEGS Sector performance.

Levels 1 to 3 are really aggregated “labels” under which activities can be conveniently grouped and assessed, while Levels 4- 5 contain “product group” market intelligence and are the levels closest to LCEGS products and services as companies would understand them.

2.4 Key Measures

In our analysis we concentrate on seven key measures. These are:

- Sales £m
- Imports
- Companies
- Exports
- Employment
- Market
- Growth

Sales is our estimate (in £m) of economic activity by identified companies in a defined region or country. Our estimate of sales is based upon where economic activity takes place i.e. the location of the business rather than the location of the income earner. In calculating Sales value we consider:

- Turnover by sub sector within postcode sets
- Capital asset adjustment by sub sector within postcode sets
- ONS GDP calculations
- Supply chain procurement value sub sector by sub sector by postcode sets
- Sub sector specific sales reporting where available

Further adjustment is made on a sub sector basis for both head office activities and virtual working organisations so that, *as far as is practical, we report upon where Sales is conducted rather than where it is reported*¹. This applies to both domestic and international sales.

Companies is a measure of the total number of companies in the region that match (or fit within) the activity headings for the LCEGS sector. Because of the limitations in using traditional SIC codes to identify high technology and “new economy” businesses we have used our own unique analytical process to allocate companies to the LCEGS activity headings. The total number of companies in this report has been arrived at by a bottom-up analysis of company stock within the country/ region using such sources as: Companies House, European credit agencies, British Telecom, Institutional listings and UK credit agencies.

Having identified the total company stock in the UK, product and service outputs have been identified and verified by accessing further databases that include: Institutional data sets, Yellow Pages, k-Matrix proprietary databases, Euromonitor, Dun and Bradstreet and Thompson.

Employment is a measure of the estimated employment numbers across all aspects of the supply chain. National, regional and other economic data sources have been used to estimate current employment levels for each LCEGS sector activity. Where employment information is scarce, or where we are estimating employment for a proportion of a company’s sales, we rely on our comprehensive case study materials to provide sensible industry - specific ratios and benchmarks. These additional methods and sources for calculating employment are important because, just as SIC codes do not currently cover all LCEGS activities, so ONS Standard Occupational Codes (SOC) do not provide a complete reflection of LCEGS employment.

Following national statistics, our employment figures are disaggregated into four streams- management, supervisory, Administrative and Other. Where we are commissioned for Skills analysis, these four streams are disaggregated into much more detailed occupational groupings.

Our employment figures for LCEGS define the labour intensity of some market activities over others and help to identify the economic activities that are generating the highest levels of employment (but not necessarily value or growth).

Market Growth is our forward looking indicator and has been measured for the short to medium term (five years) where we have a high level of confidence in the growth trend. This indicator enables us to identify the ongoing strength and potential of each economic activity relative to other sector activities within the region/ sub region and relative to growth rates across the UK and in other key country markets (See

¹ Focussing on where sales are conducted rather than where they are reported counteracts the distortion created by the financial reporting of large corporation whose headquarters may be located in a single location although sales are conducted in multiple locations/ countries.

Calculating Market Values for more information on market forecasting). The market growth rates included in this report are, effectively, a snapshot taken in July 2012. In reality market growth forecasts are a constantly changing reflection of market expectations and institutional confidence in economic performance that fluctuate on a monthly basis. Further research is currently examining the rate, range and reasons for change in market forecasting for the LCEGS sector.

Imports and Exports are calculated using both in-country and out-of-country data. The data sources accessed include those listed (separately) but also include additional data from the logistics and freight forwarding industry (amongst others). National import export data is accessed from either government agencies or other institutions where available. In addition, we track supply chains and networks where we are able to get data, again through many of the data sources already identified for the sales values figures etc, but also through logistics, consumer data, and supply chain management industries. Multi-sourcing import and export data is essential because companies rarely provide accurate or adequate numbers (to protect their competitive position).

The overall size of the LCEGS sector products and services in a specific country is calculated using three measures; Domestic Market = Domestic Sales - Exports + Imports. The “market” is used to estimate the overall potential and opportunity for international sales growth.

2.5 Data Sources

We attempt to limit the risk and error behind the numbers that we publish (whether historical or forecast) by multi-sourcing and monitoring a wide range of reliable sources and then making the remaining range of uncertainty explicit. On average 85 sources (differing depending upon the market activity) are used for each line of data in the LCEGS study.

For each market we track multiple sources of historical and forecasting data. From these sources we look to select at least seven that are current and that we have routinely tracked and verified (and, therefore, have built confidence in) over a number of years. Sources can be from company, industry, academic, public or market research sources and national statistics. The sources we reject may be out of date, unreliable, drastically under or overstated or directly derived from another source that has already been included.

When we have identified a minimum of seven acceptable sources we then take the “average” of the seven figures as our selected figure. We then look at the range of individual responses in relation to the selected figure and if the range of results is within +/- 20% of our selected figure we are generally satisfied. In some cases (where more than seven reliable sources are available) we may look to narrow the range of results by excluding the more extreme results. Where the range of results is greater than +/- 20% we then look for further sources that may be used, until we arrive within the accepted range.

2.6 Use of LCEGS Data

LCEGS data is derived in a different way to standard SIC-driven sector data or statistical survey data. LCEGS data is based upon an approach that utilises market intelligence and involves the creation, qualification and examination of new data values using techniques that include data mining, data triangulation, deduction, induction, pattern recognition and trend analysis to produce high level, processed and exploitable economic information drawn from a very wide variety of sources.

LCEGS fills a gap due to the lack of an accepted classification system and statistical base for measuring environmentally and low carbon- focused activities wherever they occur within the economy. None of the main industry classification coding systems- SIC (UK), NAICS (USA), NACE (EU), ISIC (UN) or ANZSIC (Oceania)- capture environmentally focused activities much beyond historically derived categories like Waste Management, Water Treatment and Remediation taken from the Utilities and Construction sectors.

It is also a step on the road to meeting the challenge of producing robust measures and indicators related to the green economy as a whole that will enable policy makers to make the concept of green growth operational and provide the proper international tools to measure and monitor economic effect. The need for such measures is well documented².

However while LCEGS data enables the measurement of environmentally focused activities it is not suitable for comparison with statistics based on the traditional (SIC, NACE etc.) classification systems due to differences in conceptual definitions and compilation methodology. It is also important to note that the LCEGS data is reported in £s of turnover therefore is not directly comparable with GDP/GVA estimates (which take in to account costs of inputs and taxes/subsidies In order to estimate value added). Turnover is not directly comparable to GVA in this regard.

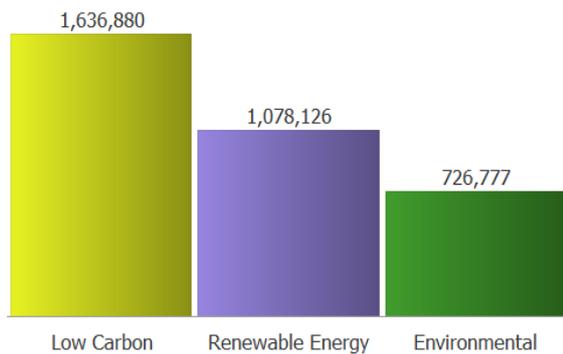
² Publications like OECD 2011, UNEP 2011, UNESCAP 2012 and World Bank 2012, and the establishment of such new bodies as the Global Green Growth Institute (GGGI) and the Global Green Growth Forum (3GF) and the Green Growth Knowledge Platform (GGKP), involving GGGI, UNEP, the World Bank and OECD.

3. Global LCEGS Sector

3.1 Global Sales

The total for LCEGS Sales in 2011/12 is **£3.4 trillion**. This shows an annual increase from 2010/11 of 3.8% compared with increases in previous years of 3.7% and 1.75%³.

Figure 1: Global LCEGS Sales for 2011/12 in £m



In 2011/12 Low Carbon sales activities were estimated at £1.64 trillion (48% of the total), compared with £1.1 trillion for Renewable Energy (31%) and £0.7 trillion (21%) for Environmental (Figure 1).

At a global level this ratio of value between the three activity groups is the same as in the previous three years. The difference between the ratios is more pronounced at a country level.

Figure 2 shows how these sales are distributed across the 24 sub sectors of the LCEGS sector. The largest sub sectors are; Alternative Fuels (16%), Building Technologies (13%), Wind (12%), Alternative Fuel and Vehicles (10%), Geothermal (9%) and Water Supply & Waste Water Treatment (8%).

³ The size of the Global ET Market has been calculated by global sales across 226 countries.

Figure 2: Global LCEGS Sales 2011/12 by Sub Sector in £m

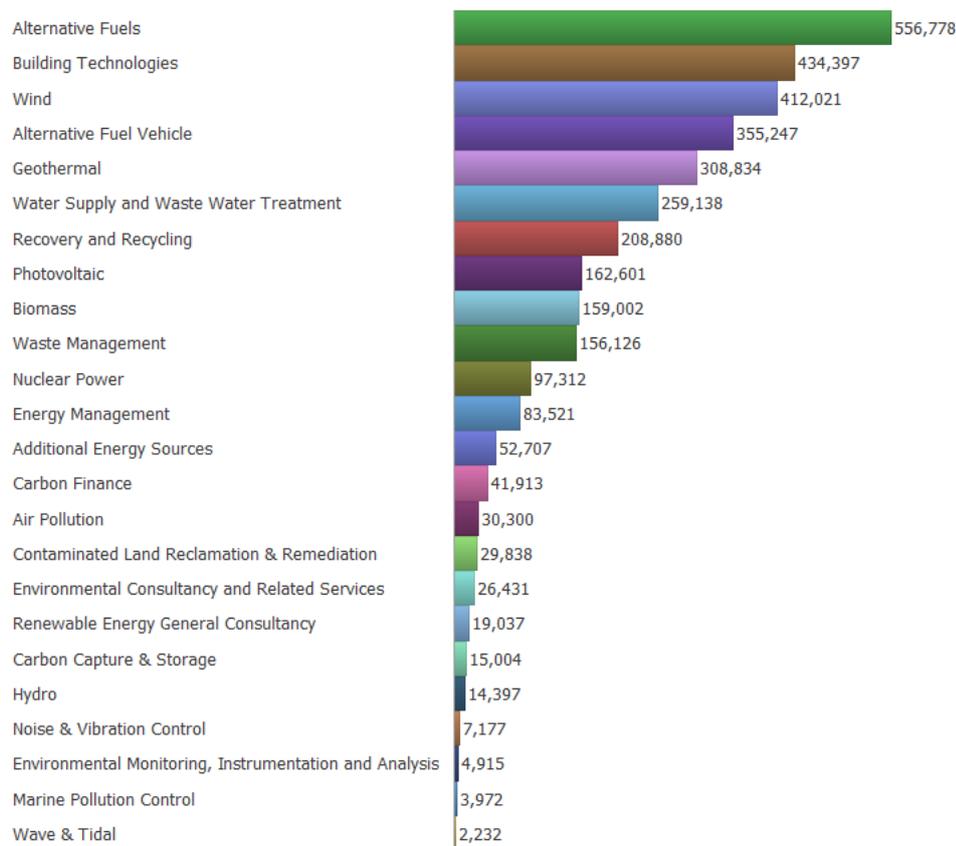
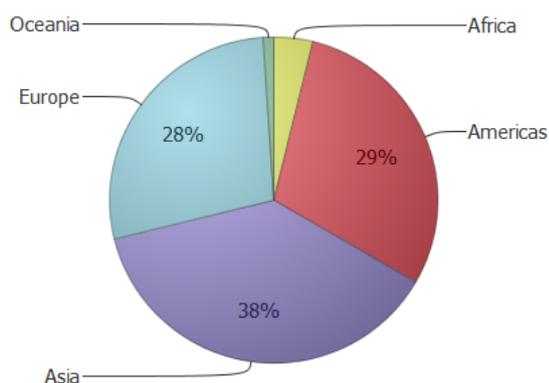


Figure 3 shows that Asia accounts for 38% of global sales, followed by the Americas (29%) and Europe (28%). This ratio of sales value between the global regions has changed slightly from the previous year, with the Americas down from 30%.

Figure 3: LCEGS Sales by Global Region 2011/12



a market share of 3.7%.

The breakdown of global sales is shown in more detail in Table 1, where we have ranked the Top 50 countries⁴, showing columns for sale value (in £m), country sales as a % of the global total and country ranking.

In Table 1 we show that the US accounts for 19.2% of the global total, followed by China (13%), Japan (6%), India (6%) and Germany (4%). The UK is ranked sixth with

⁴ The Top 50 Countries are based upon size of LCEGS sales when this data series started in 2007/ 08.

National rankings and share of global sales do not change rapidly. Most rankings have remained the same since 2008/09 and the most significant shift in share of global sales is the USA, reduced from 20% in 2008/09 to 19.5% in 2010/11 and 19.2% in 2011/12.

Overall, the Top 10 countries account for 64% of global sales and the Top 50 countries (listed below) account for 93% of sales. This is unchanged from the last report.

Table 1: Global Value of LCEGS in £m by Top 50 Countries for 2011/12

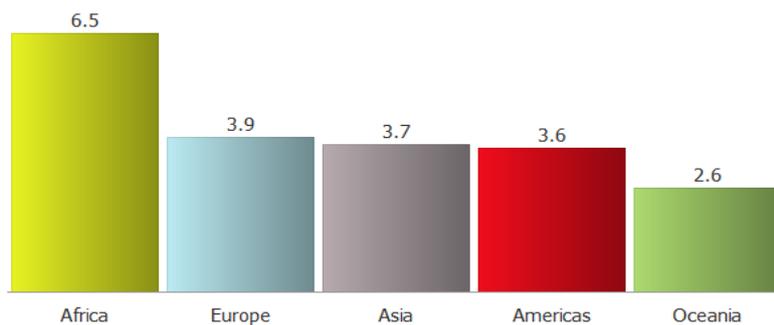
Country	Sales £m	Rank	% of Total	Country	Sales £m	Rank	% of Total
USA	660,760	1	19.2	Saudi Arabia	21,736	26	0.6
China	444,324	2	12.9	Pakistan	21,559	27	0.6
Japan	213,295	3	6.2	Egypt	20,099	28	0.6
India	210,815	4	6.1	Ukraine	20,062	29	0.6
Germany	145,267	5	4.2	Colombia	19,726	30	0.6
UK	128,141	6	3.7	Belgium	18,826	31	0.5
France	104,201	7	3.0	Bangladesh	18,211	32	0.5
Brazil	103,583	8	3.0	Vietnam	17,793	33	0.5
Spain	92,136	9	2.7	Sweden	14,675	34	0.4
Italy	89,485	10	2.6	Hong Kong	14,431	35	0.4
Russian Federation	87,327	11	2.5	Malaysia	14,412	36	0.4
Mexico	70,225	12	2.0	Austria	14,276	37	0.4
South Korea	61,651	13	1.8	Switzerland	14,128	38	0.4
Canada	61,146	14	1.8	Algeria	13,554	39	0.4
Indonesia	54,070	15	1.6	Greece	13,260	40	0.4
Taiwan	36,327	16	1.1	Romania	11,955	41	0.3
Turkey	33,827	17	1.0	Chile	11,700	42	0.3
Australia	33,804	18	1.0	Czechia	11,444	43	0.3
Iran	33,496	19	1.0	Norway	10,583	44	0.3
Thailand	33,228	20	1.0	Peru	10,224	45	0.3
Argentina	31,087	21	0.9	Portugal	10,084	46	0.3
Poland	29,526	22	0.9	Hungary	10,081	47	0.3
South Africa	29,289	23	0.9	Venezuela	10,027	48	0.3
Netherlands	28,056	24	0.8	Finland	9,131	49	0.3
Philippines	27,243	25	0.8	Denmark	9,117	50	0.3

The UK is ranked sixth for the LCEGS sector overall and sixth in 18 of the 24 sub sectors. In each of the 18 cases where the UK is sixth it is ranked behind the US, China, Japan, India and Germany. The six sub sectors where the UK is not sixth are: Carbon Finance (2nd), Alternative Energy Sources (9th- down from 8th in previous year); Environmental Consulting (7th- down from 6th); Renewable Energy Consulting (8th- down from 6th); Photovoltaic (7th) and Wave and Tidal (5th). Geothermal increased from 7th in 2010/11 to 6th in 2011/12.

3.2 Global Growth Rates 2011/12

Global growth in LCEGS in 2011/12 from 2010/11 was 3.8%. This growth was not evenly spread across the world. Figure 4 shows that growth was highest in Africa (6.5%), although this is high growth from a low base. Growth across Europe was 3.9%, which was ahead of the Americas and Asia. This growth pattern reflects the distribution of growth from previous years.

Figure 4: Global Growth % 2011/12



Global growth was not evenly spread across the LCEGS sector. Table 2 compares global sales values for 2010/11 and 2011/12 and calculates the annual growth for each sub sector.

Table 2: Global Growth in Value of LCEGS by Sub Sector Compared for 2010/11 and 2011/12

	Level 2	Sales £m 2010/ 11	Sales £m 2011/ 12	Increase £m	Increase %
Environmental	Air Pollution	29,579	30,300	721	2.4
	Contaminated Land Reclamation & Remediation	28,819	29,838	1,019	3.5
	Environmental Consultancy and Related Services	25,446	26,431	985	3.9
	Environmental Monitoring, Instrumentation and Analysis	4,718	4,915	197	4.2
	Marine Pollution Control	3,816	3,972	157	4.1
	Noise & Vibration Control	6,888	7,177	289	4.2
	Recovery and Recycling	201,613	208,880	7,267	3.6
	Waste Management	151,275	156,126	4,851	3.2
	Water Supply and Waste Water Treatment	251,772	259,138	7,366	2.9
Low Carbon	Additional Energy Sources	48,324	52,707	4,383	9.1
	Alternative Fuel Vehicle	343,956	355,247	11,291	3.3
	Alternative Fuels	536,422	556,778	20,357	3.8
	Nuclear Power	95,316	97,312	1,995	2.1
	Building Technologies	420,480	434,397	13,917	3.3
	Carbon Capture & Storage	14,413	15,004	591	4.1
	Carbon Finance	38,449	41,913	3,464	9.0
	Energy Management	80,025	83,521	3,496	4.4
Renewables	Biomass	152,895	159,002	6,107	4.0
	Geothermal	298,578	308,834	10,256	3.4
	Hydro	14,019	14,397	378	2.7
	Photovoltaic	155,929	162,601	6,672	4.3
	Renewable Energy General Consultancy	18,448	19,037	590	3.2
	Wave & Tidal	2,142	2,232	90	4.2
	Wind	391,662	412,021	20,359	5.2
Total	3,314,983	3,441,782	126,799	3.8	

Additional Energy Sources (9.1%) shows the highest annual growth (from a low base figure), followed by Carbon Finance (9%) and Wind (5.2%).

Table 3: Global Growth Rate by Top 50 Countries for 2011/12

Country	£m increase from 2010/ 11 to 2011/ 12	% increase in sales from 2010/ 11 to 2011/ 12	Country	£m increase from 2010/ 11 to 2011/ 12	% increase in sales from 2010/ 11 to 2011/ 12
US	15,991	2.5	Saudi Arabia	1,721	8.6
China	9,001	2.1	Pakistan	1,141	5.6
Japan	7,923	3.9	Egypt	1,194	6.3
India	5,955	2.9	Ukraine	1,227	6.5
Germany	4,897	3.5	Colombia	1,136	6.1
UK	5,920	4.8	Belgium	646	3.6
France	3,040	3.0	Bangladesh	998	5.8
Brazil	5,754	5.9	Vietnam	836	4.9
Spain	2,438	2.7	Sweden	307	2.1
Italy	2,146	2.5	Hong Kong	381	2.7
Russian Federation	2,781	3.3	Malaysia	831	6.1
Mexico	4,377	6.6	Austria	277	2.0
South Korea	3,381	5.8	Switzerland	317	2.3
Canada	1,839	3.1	Algeria	755	5.9
Indonesia	2,961	5.8	Greece	393	3.1
Taiwan	648	1.8	Romania	670	5.9
Turkey	2,107	6.6	Chile	783	7.2
Australia	793	2.4	Czechia	713	6.6
Iran	1,877	5.9	Norway	735	7.5
Thailand	1,828	5.8	Peru	578	6.0
Argentina	1,639	5.6	Portugal	305	3.1
Poland	1,637	5.9	Hungary	552	5.8
South Africa	607	2.1	Venezuela	614	6.5
Netherlands	573	2.1	Finland	249	2.8
Philippines	1,550	6.0	Denmark	135	1.5

Table 3 shows that annual growth varies greatly across the Top 50 countries. The highest growth occurs in Saudi Arabia (8.6%), Norway (7.5%), Chile (7.2%), Mexico and Turkey (6.6%). The more mature economies show lower annual growth trends, but from a higher economic base. This means that their contribution to growth in the value of global Low Carbon Environmental Goods and Services is greater.

3.3 Global Growth Trends from 2011/12

In Figure 5 we show the forecast global growth rates⁵ for the LCEGS sector from 2011/12 to 2014/15. Growth for LCEGS as a whole increases from a forecast 4% to 4.2% i.e. steady and sustainable growth. Figure 5 also shows that forecast growth rates are variable between Environmental (lower growth) and Renewable Energy (higher growth) activities.

⁵ Global forecast growth rates are an aggregate of forecast growth rates for each LCEGS activity and for each country in the data set. The figure is based upon the mean of all values, weighted by the size of sales for each value

Figure 5: Forecast Global Growth Rates 2011/12 to 2014/15 (%)⁶

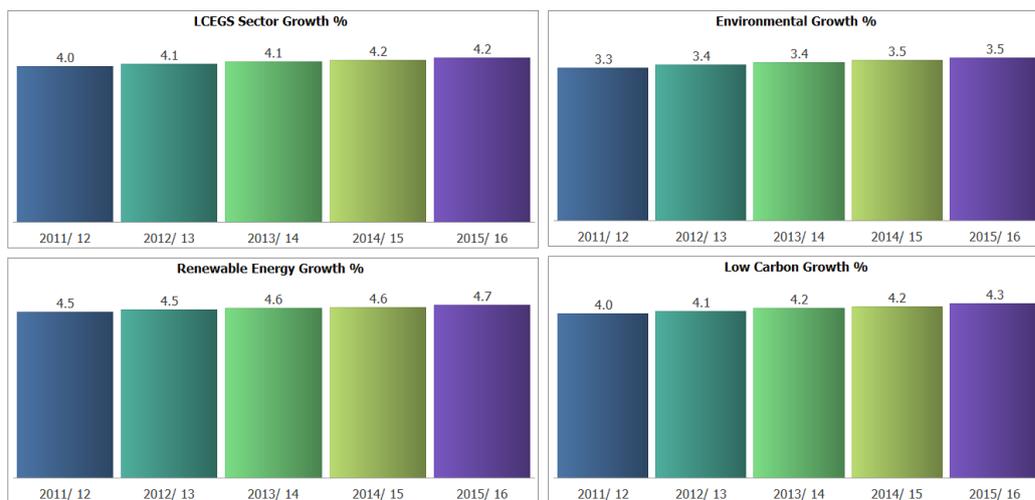
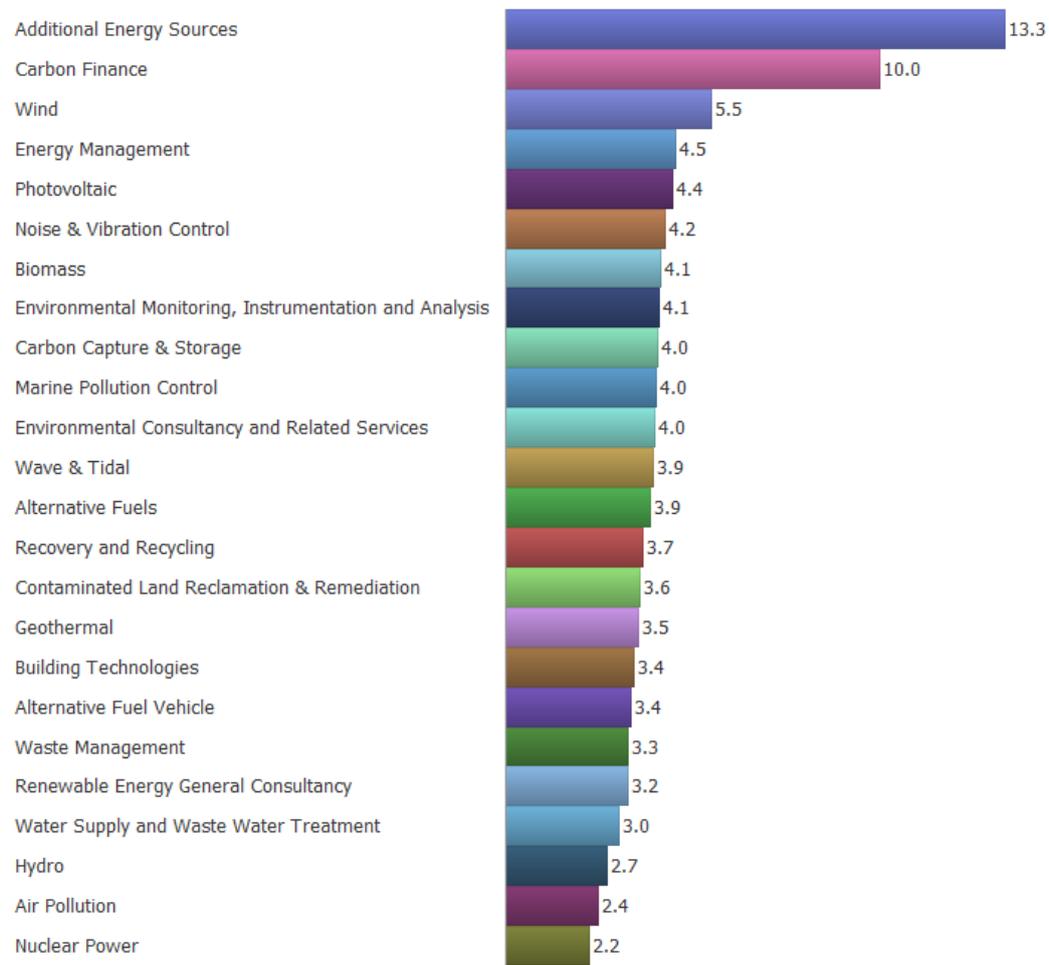


Figure 6 shows that at the sub sector level the highest global growth rates from 2011/12 to 2012/13 are forecast to be Additional Energy Sources (13.3%), Carbon Finance (10.0%), and Wind (5.5%). The lowest growth rates will be for Nuclear Power (2.2), Air Pollution (2.4%) and Hydro Power (2.7%).

⁶ Forecast growth rates apply to the base year i.e. the 2011/12 growth rate is the percentage change that is forecast to apply to 2011/12 values and be realised in 2012/13 figures.

Figure 6: Global Growth Forecasts 2011/12 by Sub Sector (%)



4. UK LCEGS Sector

4.1 Introduction

Section 3 briefly positioned the UK LCEGS Sector in relation to global markets. This section now looks at the UK in more detail against each of our four key measures - sales, companies, employment and growth.

4.2 UK LCEGS Headlines

UK LCEGS Sales in 2011/12 was £128.1bn. This compares with Sales in 2010/11 of £122.2bn and shows an annual increase of £5.9bn approximately 4.8%. Annual growth in the previous year was £5.4bn or 4.7%.

The number of UK LCEGS Companies in 2011/12 was 51,292 compared with 51,682 in 2010/11. Growth in LCEGS Companies has experienced a slight decline since 2008/09

The volume of UK LCEGS Employment in 2011/12 is 937,923 compared with 939,537 in 2010/11 and 914,273 in 2009/10. The growth in employment between 2009/10 and 2010/11 has not continued into 2011/12.

4.3 UK LCEGS Sales

Table 4 shows sales by sub sector for the UK for the last three years.

Table 4: UK LCEGS Sales in £m for 2009/10 to 2011/12

	Level 2	Sales £m 2011/12	Sales £m 2010/11	Sales £m 2009/10	Growth 2010/ 11 to 2011/12	Growth 2009/ 10 to 2010/11
Environmental	Air Pollution	1,042	1,018	997	2.4	2.1
	Contaminated Land	1,021	990	963	3.1	2.8
	Environmental Consultancy	851	821	794	3.6	3.4
	Environmental Monitoring	172	165	160	3.7	3.4
	Marine Pollution Control	139	134	129	4.0	3.7
	Noise & Vibration Control	238	229	220	4.1	3.9
	Recovery and Recycling	7,435	7,174	6,936	3.6	3.4
	Waste Management	5,359	5,210	5,071	2.9	2.7
	Water Supply and Waste Water Treatment	8,529	8,373	8,231	1.9	1.7
Low Carbon	Additional Energy Sources	1,400	1,347	1,297	3.9	3.9
	Alternative Fuel Vehicle	13,993	13,431	12,915	4.2	4.0
	Alternative Fuels	19,151	18,107	17,176	5.8	5.4
	Nuclear Power	3,960	3,873	3,798	2.3	2.0
	Building Technologies	15,440	14,794	14,129	4.4	4.7
	Carbon Capture & Storage	534	514	497	3.8	3.5
	Carbon Finance	6,749	6,319	5,925	6.8	6.7
	Energy Management	2,903	2,812	2,719	3.2	3.4
Renewables	Biomass	6,025	5,728	5,454	5.2	5.0
	Geothermal	11,271	10,701	10,186	5.3	5.1
	Hydro	561	544	529	3.0	2.9
	Photovoltaic	5,667	5,314	4,997	6.6	6.3
	Renewable Energy General Consultancy	535	520	506	3.0	2.8
	Wave & Tidal	91	86	82	6.0	5.5
	Wind	15,076	14,017	13,070	7.5	7.3
Total	128,142	122,222	116,780	4.8	4.7	

As with the global pattern for sales (Figure 2), the largest sub sectors are: Alternative Fuels (15% of total Sales), followed by Building Technologies (12%), Wind (12%), Alternative Fuel Vehicle (11%) and Geothermal (9%).

In the last two columns of Table 4 the year-on-year increases are shown from 2009/10 to the current year. In two sub sectors- Energy Management and Building Technologies- growth has slowed down for 2011/12.

The highest year-on-year increase in growth rate is for Wave & Tidal and Alternative Fuels. Wave and Tidal has grown by the greatest percentage (5.5% to 6%) over the three year period.

At Level 3 (the next level of disaggregation) the 2011/12 UK LCEGS Sector includes 29 activities worth over £1bn⁷ per annum (the same as for 2010/11).

These Level 3 activities account for 23% of Level 3 activities and 83.1% of UK Sales. They are listed in ranked order in Table 5, by value and by percentage of the UK total.

⁷ Level 3 cut-off i.e. £1bn demonstrates the Pareto effect, where 20% of activities account for 80% of the total.

Table 5: UK LCEGS Sales Top Activities Level 3 (£m) for 2011/12

Level 1	Level 2	Level 3	Total Sales £m	% of Total
Low Carbon	Alternative Fuels	Other Bio Fuels	13,605	10.6
Low Carbon	Alternative Fuel Vehicle	Alternative Fuels (main Stream) for Vehicles Only	12,177	9.5
Renew ables	Wind	Wind Farm Systems	6,154	4.8
Environmental	Water Supply and Waste Water Treatment	Water Treatment and Distribution	6,060	4.7
Low Carbon	Building Technologies	Window s	5,648	4.4
Low Carbon	Carbon Finance	Carbon Credits Trading	5,234	4.1
Renew ables	Wind	Large Wind Turbine	4,727	3.7
Low Carbon	Building Technologies	Insulation and Heat Retention Materials	4,630	3.6
Renew ables	Geothermal	Whole Systems Manufacture	4,444	3.5
Renew ables	Wind	Small Wind Turbine	4,195	3.3
Low Carbon	Building Technologies	Doors	3,468	2.7
Environmental	Recovery and Recycling	Waste Collection	2,886	2.3
Renew ables	Geothermal	Suppliers of Systems	2,562	2.0
Renew ables	Photovoltaic	Systems & Equipment	2,514	2.0
Renew ables	Biomass	Biomass Energy Systems	2,497	1.9
Renew ables	Geothermal	Manufacture and Supply of Specialist Equipment	2,400	1.9
Low Carbon	Alternative Fuels	Other Fuels	2,299	1.8
Environmental	Water Supply and Waste Water Treatment	Engineering	2,220	1.7
Environmental	Waste Management	Construction & Operation of Waste Treatment Facilities	2,188	1.7
Low Carbon	Alternative Fuels	Main Stream Bio Fuels	2,145	1.7
Renew ables	Biomass	Boilers and related Systems	1,942	1.5
Low Carbon	Alternative Fuel Vehicle	Other Fuels and Vehicles	1,817	1.4
Environmental	Waste Management	Equipment For Waste Treatment	1,803	1.4
Renew ables	Geothermal	Consulting & Related Services	1,716	1.3
Low Carbon	Building Technologies	Monitoring and Control Systems	1,693	1.3
Low Carbon	Nuclear Pow er	Nuclear Pow er Plant Operations	1,538	1.2
Renew ables	Photovoltaic	Photovoltaic Cells	1,486	1.2
Renew ables	Photovoltaic	Other Related Equipment and Chemicals	1,345	1.0
Environmental	Recovery and Recycling	Glass Stock Processing	1,100	0.9

4.4 UK LCEGS Companies

Table 6 shows companies by sub sector for the UK for the last three years.

As for UK sales, the largest company counts by sub sector are Alternative Fuels, Wind, Building Technologies, Alternative Fuel Vehicles and Geothermal. Together they account for 59% of the total.

In the last two columns of Table 6 the year-on-year increases are shown from 2009/10 to the current year. There is little variation in the sub sector growth rates for 2010/11 to 2011/12 or across the sector as a whole.

Table 6: UK LCEGS Companies in £m for 2009/10 to 2011/12

	Level 2	Companies 2011 12	Companies 2010 11	Companies 2009 10	Growth 2010/ 11 to 2011/ 12	Growth 2009/ 10 to 2010/ 11
Environmental	Air Pollution	495	496	496	-0.2	0.0
	Contaminated Land	440	441	442	-0.2	-0.2
	Environmental Consultancy	375	375	375	0.0	0.0
	Environmental Monitoring	71	71	72	0.0	-1.4
	Marine Pollution Control	56	56	56	0.0	0.0
	Noise & Vibration Control	103	104	104	-1.0	0.0
	Recovery and Recycling	3,147	3,149	3,153	-0.1	-0.1
	Waste Management	2,294	2,293	2,290	0.0	0.1
	Water Supply and Waste Water Treatment	3,755	3,750	3,755	0.1	-0.1
Low Carbon	Additional Energy Sources	583	582	582	0.2	0.0
	Alternative Fuel Vehicle	6,078	6,087	6,078	-0.1	0.1
	Alternative Fuels	7,769	7,799	7,775	-0.4	0.3
	Nuclear Power	1,826	1,829	1,828	-0.2	0.1
	Building Technologies	6,321	6,321	6,323	0.0	0.0
	Carbon Capture & Storage	232	232	232	0.0	0.0
	Carbon Finance	1,974	1,963	1,946	0.6	0.9
	Energy Management	1,220	1,224	1,221	-0.3	0.2
Renewables	Biomass	2,339	2,337	2,336	0.1	0.0
	Geothermal	4,462	4,471	4,465	-0.2	0.1
	Hydro	261	261	261	0.0	0.0
	Photovoltaic	2,084	2,086	2,085	-0.1	0.0
	Renewable Energy General Consultancy	230	231	230	-0.4	0.4
	Wave & Tidal	33	33	33	0.0	0.0
	Wind	5,481	5,491	5,473	-0.2	0.3
Total	51,629	51,682	51,611	-0.1	0.1	

At Level 3 the 2011/12 UK LCEGS Sector includes 28 activities with more than 500 companies. They account for 82.2% of the total and are listed in ranked order in Table 7, by value and by percentage of the UK total.

Table 7: UK LCEGS Companies Top Level 3 for 2011/12

Level 1	Level 2	Level 3	Companies	% of Total
Low Carbon	Alternative Fuels	Other Bio Fuels	5,648	11.0
Low Carbon	Alternative Fuel Vehicle	Alternative Fuels (main Stream) for Vehicles Only	5,346	10.4
Environmental	Water Supply and Waste Water Treatment	Water Treatment and Distribution	2,665	5.2
Low Carbon	Building Technologies	Windows	2,347	4.6
Renewables	Wind	Wind Farm Systems	2,189	4.3
Renewables	Geothermal	Whole Systems Manufacture	1,933	3.8
Low Carbon	Building Technologies	Insulation and Heat Retention Materials	1,919	3.7
Renewables	Wind	Large Wind Turbine	1,673	3.3
Renewables	Wind	Small Wind Turbine	1,620	3.2
Low Carbon	Carbon Finance	Carbon Credits Trading	1,482	2.9
Low Carbon	Building Technologies	Doors	1,451	2.8
Environmental	Recovery and Recycling	Waste Collection	1,197	2.3
Renewables	Biomass	Biomass Energy Systems	995	1.9
Environmental	Water Supply and Waste Water Treatment	Engineering	992	1.9
Environmental	Waste Management	Construction & Operation of Waste Treatment Facilities	941	1.8
Renewables	Geothermal	Manufacture and Supply of Specialist Equipment	932	1.8
Low Carbon	Alternative Fuels	Other Fuels	907	1.8
Renewables	Photovoltaic	Systems & Equipment	905	1.8
Renewables	Geothermal	Suppliers of Systems	873	1.7
Low Carbon	Alternative Fuels	Main Stream Bio Fuels	791	1.5
Environmental	Waste Management	Equipment For Waste Treatment	776	1.5
Renewables	Biomass	Boilers and related Systems	745	1.5
Low Carbon	Alternative Fuel Vehicle	Other Fuels and Vehicles	738	1.4
Low Carbon	Nuclear Power	Nuclear Power Plant Operations	738	1.4
Renewables	Geothermal	Consulting & Related Services	680	1.3
Low Carbon	Building Technologies	Monitoring and Control Systems	598	1.2
Renewables	Photovoltaic	Photovoltaic Cells	527	1.0
Renewables	Photovoltaic	Other Related Equipment and Chemicals	516	1.0

4.5 UK LCEGS Employment

Table 8 shows employment by sub sector for the UK for the last three years.

Table 8: UK LCEGS Employment for 2009/10 to 2011/12

	Level 2	Employment 2011/ 12	Employment 2010/ 11	Employment 2009/10	Growth % 2010/ 11 to 2011/12	Growth % 2009/ 10 to 2010/11
Environmental	Air Pollution	9,459	9,466	9,186	-0.1	3.0
	Contaminated Land	8,478	8,504	8,233	-0.3	3.3
	Environmental Consultancy	7,311	7,313	7,100	0.0	3.0
	Environmental Monitoring	1,492	1,491	1,449	0.1	2.9
	Marine Pollution Control	1,055	1,055	1,025	0.0	2.9
	Noise & Vibration Control	1,992	1,994	1,933	-0.1	3.2
	Recovery and Recycling	56,242	56,309	54,629	-0.1	3.1
	Waste Management	44,875	44,827	43,571	0.1	2.9
	Water Supply and Waste Water Treatment	72,847	72,932	70,841	-0.1	3.0
Low Carbon	Additional Energy Sources	11,324	11,320	11,331	0.0	-0.1
	Alternative Fuel Vehicle	104,428	104,453	101,072	0.0	3.3
	Alternative Fuels	143,559	143,422	140,098	0.1	2.4
	Nuclear Power	35,908	35,910	35,914	0.0	0.0
	Building Technologies	112,433	112,634	109,187	-0.2	3.2
	Carbon Capture & Storage	4,672	4,685	4,695	-0.3	-0.2
	Carbon Finance	24,475	24,487	24,146	0.0	1.4
	Energy Management	23,324	23,333	22,648	0.0	3.0
Renewables	Biomass	48,884	48,994	47,485	-0.2	3.2
	Geothermal	81,544	81,417	79,012	0.2	3.0
	Hydro	5,097	5,100	4,955	-0.1	2.9
	Photovoltaic	40,377	40,398	39,152	-0.1	3.2
	Renewable Energy General Consultancy	4,840	4,856	4,865	-0.3	-0.2
	Wave & Tidal	570	570	552	0.0	3.3
	Wind	94,068	94,157	91,194	-0.1	3.2
Total	939,254	939,627	914,273	0.0	2.8	

In the last two columns of Table 8 the year-on-year increases are shown from 2009/10 to the current year. There are wide variations between the two years as the employment gains between 2009/10 and 2010/11 turn into a small reduction in overall employment numbers.

As for UK sales, the largest employment counts by sub sector are Alternative Fuels, Wind, Building Technologies, Alternative Fuel & Vehicles and Geothermal. Together they account for 57% of employment.

Table 9: UK LCEGS Employment Top Level 3 for 2011/12

Level 1	Level 2	Level 3	Employment	% of Total
Low Carbon	Alternative Fuels	Other Bio Fuels	101,430	10.8
Low Carbon	Alternative Fuel Vehicle	Alternative Fuels (main Stream) for Vehicles Only	90,864	9.7
Environmental	Water Supply and Waste Water Treatment	Water Treatment and Distribution	50,546	5.4
Low Carbon	Building Technologies	Window s	41,594	4.4
Renew ables	Wind	Wind Farm Systems	38,151	4.1
Low Carbon	Building Technologies	Insulation and Heat Retention Materials	34,871	3.7
Renew ables	Geothermal	Whole Systems Manufacture	32,704	3.5
Renew ables	Wind	Large Wind Turbine	31,077	3.3
Low Carbon	Building Technologies	Doors	24,999	2.7
Renew ables	Wind	Small Wind Turbine	24,834	2.6
Environmental	Recovery and Recycling	Waste Collection	22,942	2.4
Renew ables	Biomass	Biomass Energy Systems	21,911	2.3
Environmental	Water Supply and Waste Water Treatment	Engineering	20,190	2.2
Renew ables	Geothermal	Suppliers of Systems	18,547	2.0
Environmental	Waste Management	Equipment For Waste Treatment	17,834	1.9
Renew ables	Photovoltaic	Systems & Equipment	17,214	1.8
Low Carbon	Alternative Fuels	Main Stream Bio Fuels	17,113	1.8
Low Carbon	Alternative Fuels	Other Fuels	16,905	1.8
Renew ables	Geothermal	Manufacture and Supply of Specialist Equipment	16,881	1.8
Environmental	Waste Management	Construction & Operation of Waste Treatment Facilities	16,848	1.8
Low Carbon	Carbon Finance	Carbon Credits Trading	16,417	1.8
Renew ables	Biomass	Boilers and related Systems	14,058	1.5
Low Carbon	Alternative Fuel Vehicle	Other Fuels and Vehicles	13,547	1.4
Renew ables	Geothermal	Consulting & Related Services	12,583	1.3
Low Carbon	Nuclear Pow er	Nuclear Pow er Plant Operations	12,453	1.3
Low Carbon	Building Technologies	Monitoring and Control Systems	10,935	1.2
Renew ables	Photovoltaic	Photovoltaic Cells	10,869	1.2
Low Carbon	Nuclear Pow er	Nuclear Safety Engineering Services	10,031	1.1

At Level 3 the 2010/11 UK LCEGS Sector includes 28 activities with more than 10,000 employees. These 28 activities account for 22% of activities and 81% of sector employment They are listed in ranked order in Table 9, by value and by percentage of the UK total.

4.6 UK LCEGS Sales Values Forecast Growth

LCEGS growth between 2010/11 and 2011/12 was 4.8%. Forecast growth rates for the UK are shown in Figure 7⁸. The sector shows a steady increase in growth from 4.8% in 2011/12 to 5.9% by 2015/16. In Table 10 forecast growth is shown by sub sector. Forecast growth rates vary significantly between high growth (Wind and Carbon Finance) and low growth (Water/ Waste Water Treatment, Air Pollution and Nuclear Power).

⁸ Growth forecasts are updated annually, therefore they will vary between LCEGS reports

Figure 7: Forecast UK LCEGS Growth 2011/12 to 2015/16⁹

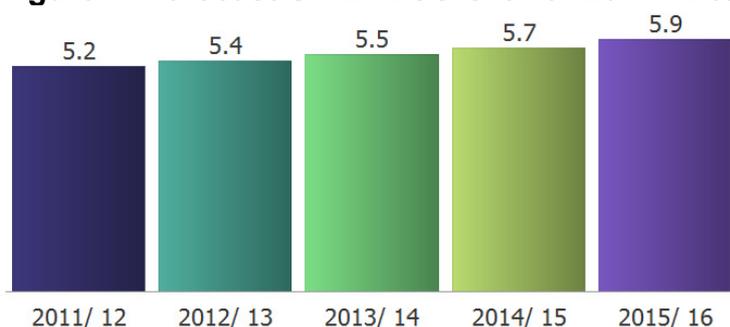


Table 10: UK LCEGS Forecast Growth by Sub Sector

	Level 2	Growth % 2011/ 12	Growth % 2012/ 13	Growth % 2013/ 14	Growth % 2014/ 15	Growth % 2015/ 16
Environmental	Air Pollution	2.1	2.2	2.3	2.4	2.5
	Contaminated Land	2.9	3.1	3.1	3.2	3.3
	Environmental Consultancy	3.6	3.7	3.6	3.7	3.9
	Environmental Monitoring	3.6	3.6	3.9	3.9	4.1
	Marine Pollution Control	4.0	4.1	4.2	4.3	4.6
	Noise & Vibration Control	4.1	4.3	4.5	4.5	4.7
	Recovery and Recycling	3.7	3.9	4.1	4.3	4.4
	Waste Management	2.9	3.0	3.0	3.2	3.3
	Water Supply and Waste Water Treatment	1.8	1.9	2.0	2.0	2.1
Low Carbon	Additional Energy Sources	4.1	4.1	4.1	4.5	4.5
	Alternative Fuel Vehicle	3.9	4.1	4.2	4.4	4.5
	Alternative Fuels	5.4	6.0	6.1	6.4	6.1
	Building Technologies	4.9	5.0	5.2	5.5	5.6
	Carbon Capture & Storage	3.7	3.7	3.8	3.9	3.9
	Carbon Finance	12.8	10.7	10.5	10.1	12.5
	Energy Management	3.5	3.7	3.8	3.9	4.1
	Nuclear Power	2.4	2.6	3.0	3.1	3.4
Renewables	Biomass	5.3	5.3	5.5	5.8	6.0
	Geothermal	5.5	5.6	5.8	6.0	6.0
	Hydro	3.0	3.0	3.1	3.3	3.5
	Photovoltaic	6.4	6.9	6.9	7.1	7.6
	Renew able Energy General Consultancy	3.0	3.0	3.1	3.0	3.3
	Wave & Tidal	5.8	6.0	6.2	6.4	6.7
	Wind	7.6	7.7	8.1	8.0	8.2

4.7 LCEGS Activities and the Value Chain

All LCEGS activities have been assigned a simple code that reflects the type of activity undertaken. This is important when trying to understand the comparative value of activities across the LCEGS value chains.

⁹ Forecast growth rates apply to the base year i.e. the 2011/12 growth rate is the percentage change that is forecast to apply to 2011/12 values and be realised in 2012/13 figures.

Figure 8: UK LCEGS 2011/12 Sales (£m) by Activity Code

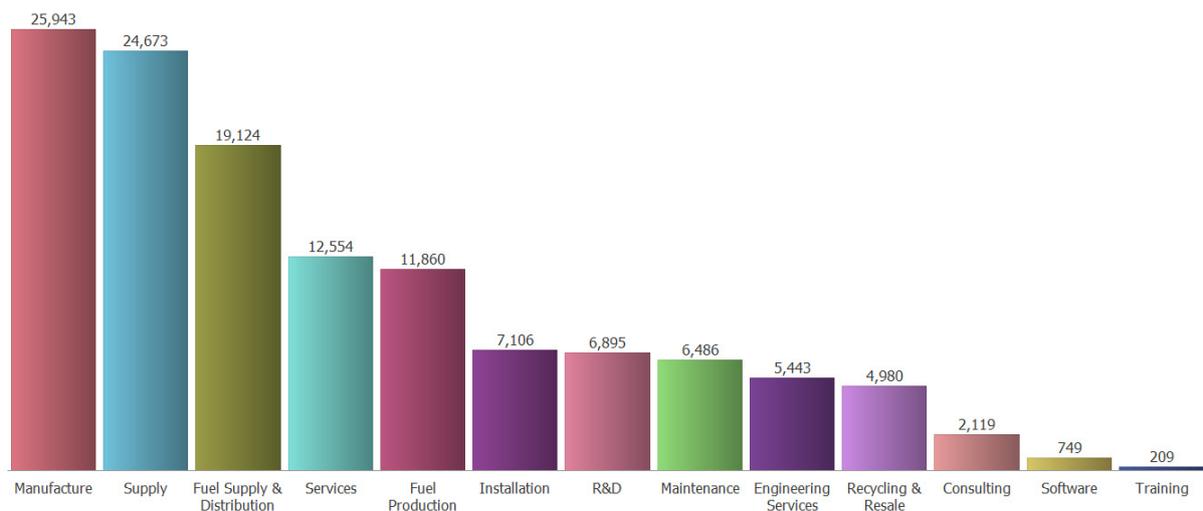


Figure 8 shows the distribution of value (£m) across the 13 activity headings. Manufacturing accounts for 20% or £26bn of the total and R&D for 5% or £7bn.

Figure 9: UK LCEGS 2011/12 Employment by Activity Code

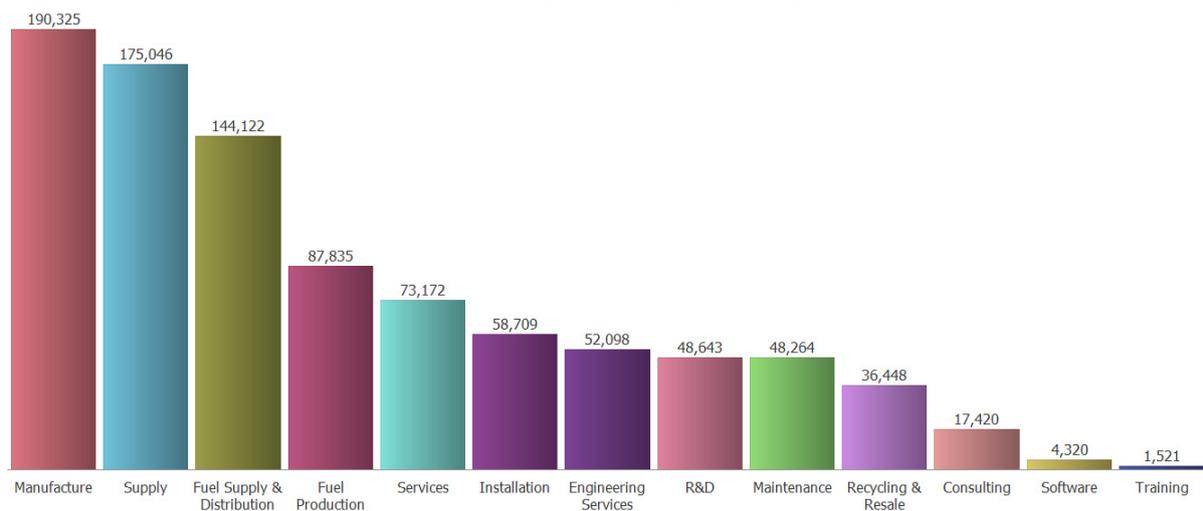


Figure 9 shows the distribution of employment with Manufacture accounting for 20% or 190,000 and R&D accounting for 49,000 or 5%.

For both Sales and Employment, the manufacturing and R&D percentages are slightly down on the previous years 21% and 6% respectively.

Figure 10 shows all sub sector activities using a 100% bar chart. This obscures the relative financial value of activities but does give a sense of how activities are distributed across the sector by showing each sub sector split by activity code. While this is a very simplistic way of displaying the LCEGS sector, it does at least show the

relative importance and ratio of manufacture and service activities across the different sub sectors¹⁰.

¹⁰ Activity codes were assigned to each LCEGS activity based upon a "best fit" analysis using 13 agreed codes that could accommodate most of the important value chain activities for the sector. They are primarily designed to separate manufacturing and service activities, but can also be used to identify R&D intensity across different sub sectors of LCEGS.

Figure 10: UK LCEGS 2011/12 Sales by Activity Code



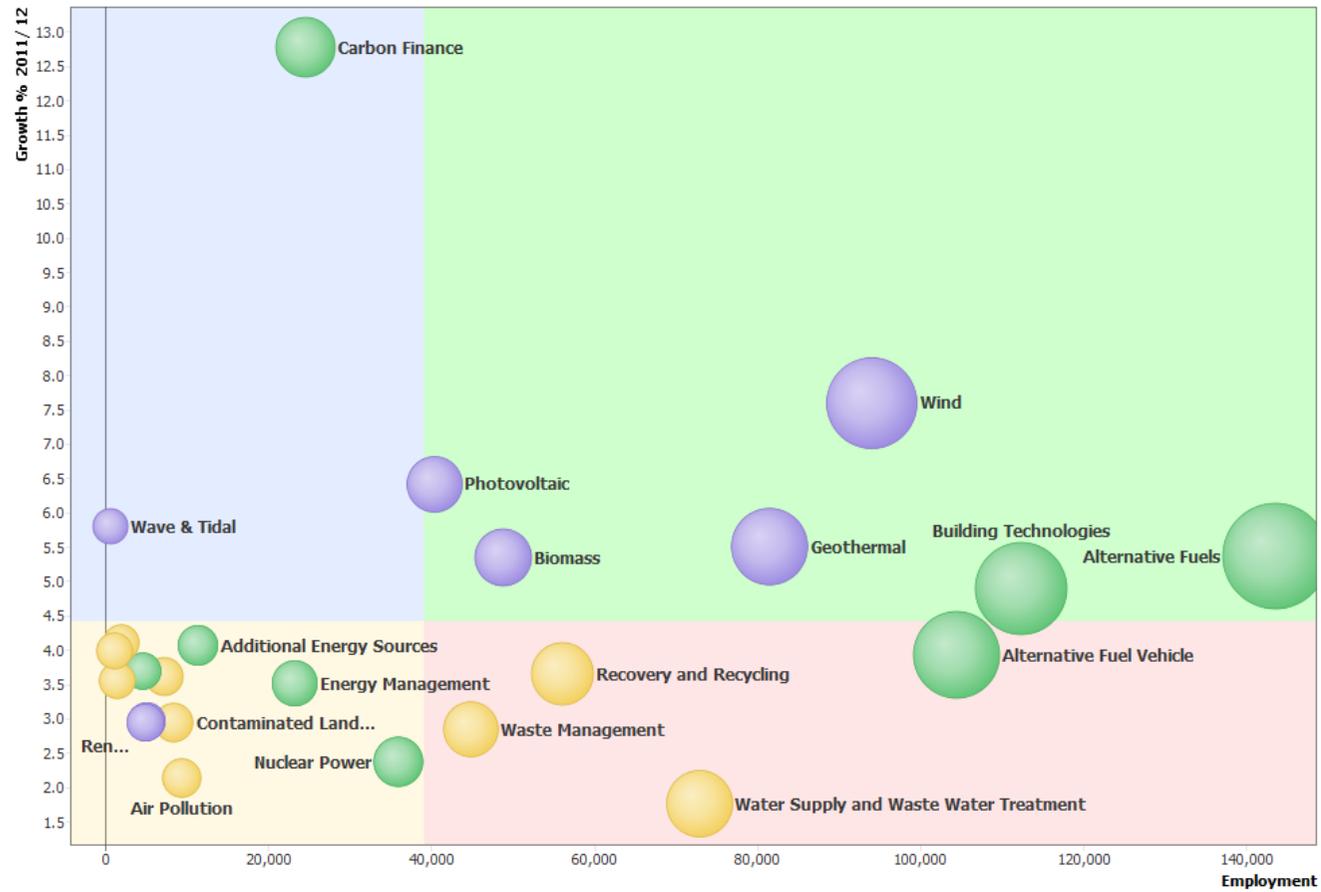
4.8 UK LCEGS Summary

In Figure 11 a Bubble Chart is used to display three of the four measures- Employment (horizontal axis), Current Year Sales Growth rate (vertical axis) and the size of each sub sector bubble to represent the value of sales.

In a Bubble Chart the ideal positioning for a sub sector is top, right and large. Figure 11 confirms that the LCEGS sector is dominated by three Low Carbon sub sectors- Alternative Fuels, Alternative Fuel Vehicle and Building Technologies - and two Renewable Energy sub sectors - Wind and Geothermal. Many of the Environmental sub sectors fall into the bottom left quadrant¹¹ which represents (comparatively) lower growth/ lower employment.

¹¹ Quadrants are formed using the intersection of mean values for both the X and Y axes.

Figure 11: UK LCEGS Sector Summary



Key: Green = Low Carbon: Blue = Renewables and Yellow = Environmental

5.UK LCEGS by Regions

5.1 Introduction

As an extension of the UK LCEGS analysis, the national figures were disaggregated for the UK Government Office Regional Boundries and Devolved Administrations and for the UK sub regions. This section provides a brief comparison of LCEGS across the UK, using the four key measures

5.2 UK LCEGS Regional Measures 2011/12

Figure 12 shows that London (20%), the South East (12%) and the North West (10%) are the largest LCEGS regions by sales.

Figure 12: UK LCEGS Regional Sales 2011/12 (£m)

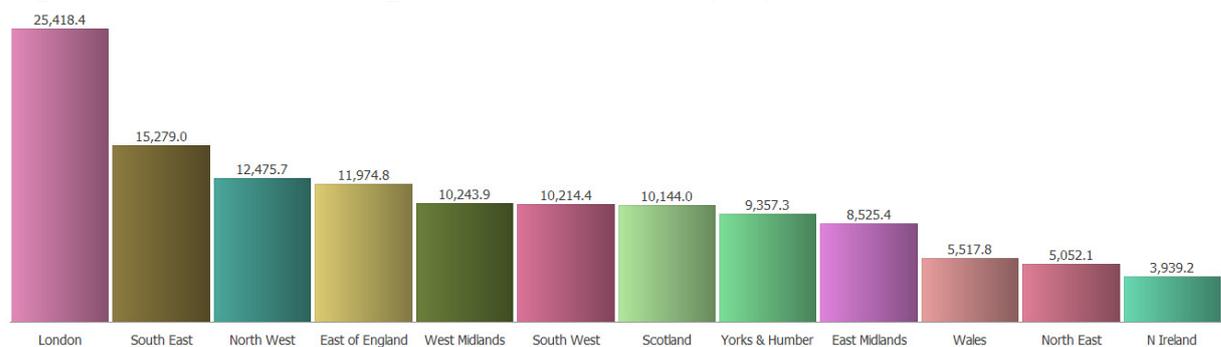


Figure 13 shows that London (18%), the South East (13%), the North West (10%) and East of England (10%) have the largest number of LCEGS companies.

Figure 13: UK LCEGS Regional Companies 2011/12

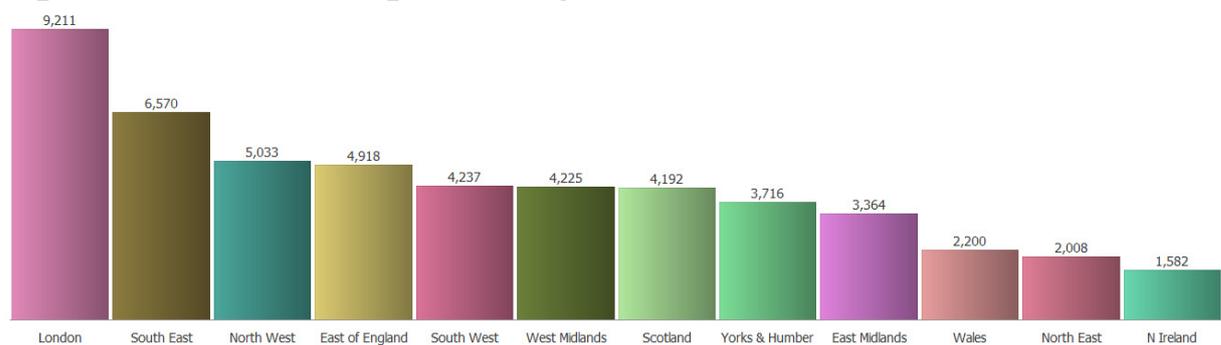


Figure 14 shows that London (17%), the South East (13%) and the North West (10%) have the largest number of LCEGS employees.

Figure 14: UK LCEGS Regional Employment 2011/12

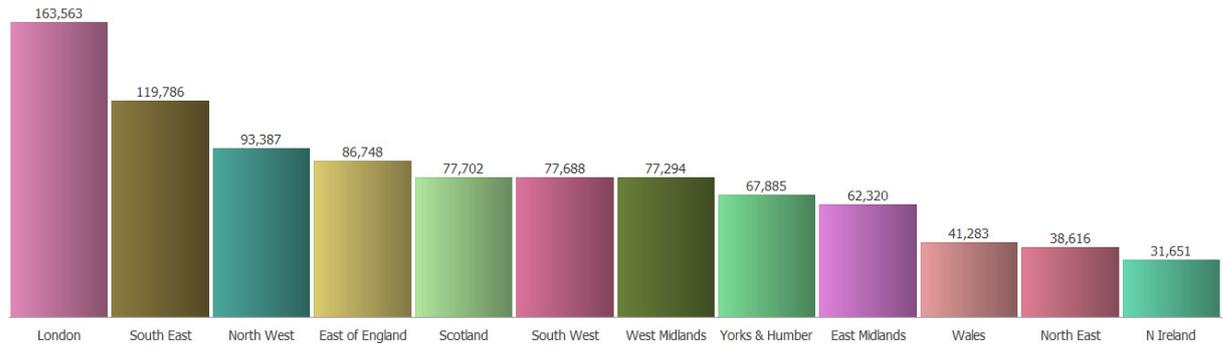


Table 11: UK LCEGS Regional Sales 2011/12 (£m)

Level 2	East Midlands	East of England	London	N Ireland	North East	North West	Scotland	South East	South West	Wales	West Midlands	Yorks & Humber
Air Pollution	56.7	118.7	106.3	44.9	61.0	141.2	134.4	101.0	94.4	34.3	42.4	106.1
Contaminated Land	91.7	125.7	90.4	20.0	57.0	169.0	118.2	84.5	100.3	28.8	46.2	89.5
Environmental Consultancy	80.4	57.5	117.8	36.4	22.1	102.4	66.8	106.8	52.0	30.4	100.9	76.9
Environmental Monitoring	9.9	20.4	24.4	7.1	6.1	15.6	11.9	35.4	10.7	7.9	11.7	10.6
Marine Pollution Control	9.2	8.9	17.8	5.6	7.2	14.0	13.5	22.8	12.8	4.4	8.3	14.2
Noise & Vibration Control	11.6	24.0	49.0	11.2	8.0	20.2	12.8	26.2	21.8	15.7	13.8	24.0
Recovery and Recycling	318.4	1,140.9	937.7	212.7	224.8	843.1	810.6	861.4	681.3	268.3	540.6	594.8
Waste Management	326.7	480.2	1,272.2	218.4	129.2	319.5	445.3	698.8	520.6	131.7	357.4	459.5
Water Supply/ Waste Water	355.6	606.8	1,541.8	295.5	171.4	624.2	746.3	999.5	844.4	639.0	756.3	948.5
Additional Energy Sources	107.3	157.9	159.5	41.1	79.0	205.3	132.9	106.8	86.1	67.2	111.1	146.1
Alternative Fuel Vehicle	498.3	1,871.2	1,363.9	458.9	964.0	1,590.5	594.0	1,761.8	1,157.8	459.0	1,749.7	1,524.0
Alternative Fuels	1,895.4	2,289.9	2,097.4	536.9	907.3	2,152.7	1,924.7	2,278.2	1,938.1	624.8	1,758.2	747.0
Nuclear Power	158.3	427.8	411.1	55.7	145.8	599.9	468.0	712.4	445.9	165.1	196.5	173.6
Building Technologies	1,150.8	1,275.6	2,281.9	375.6	741.8	1,609.7	1,125.4	2,641.3	1,239.6	852.4	815.7	1,330.5
Carbon Capture & Storage	39.0	81.6	62.8	12.9	33.5	98.3	63.3	1.4	42.4	11.0	30.4	57.6
Carbon Finance	18.4	26.3	6,517.5	6.8	9.6	27.1	23.7	41.8	23.8	11.4	22.3	20.3
Energy Management	277.6	191.2	358.6	91.1	174.0	309.0	147.8	289.3	330.5	151.3	316.7	265.9
Biomass	435.5	604.7	1,083.4	131.7	176.5	477.5	768.1	664.1	494.2	309.2	514.3	366.1
Geothermal	709.6	1,054.0	2,739.1	553.8	396.8	859.1	769.3	1,064.2	773.6	671.2	753.9	926.2
Hydro	49.3	55.8	111.6	22.1	16.0	41.5	31.4	79.9	34.3	18.0	65.9	34.7
Photovoltaic	422.0	382.4	1,444.0	167.4	229.9	493.8	350.3	553.5	319.8	384.9	632.5	286.8
Renew able Energy General Consultancy	34.5	52.7	90.6	12.0	17.6	55.4	42.5	85.0	43.2	20.1	42.0	39.6
Wave & Tidal	4.4	10.7	11.5	2.6	4.1	9.1	9.6	9.4	8.1	5.7	7.8	8.3
Wind	1,464.9	909.9	2,528.0	618.7	469.3	1,697.5	1,333.2	2,053.5	938.7	606.1	1,349.3	1,106.5
Total	8,525.5	11,974.8	25,418.3	3,939.1	5,052.0	12,475.6	10,144.0	15,279.0	10,214.4	5,517.9	10,243.9	9,357.3
% Of Total	6.7	9.3	19.8	3.1	3.9	9.7	7.9	11.9	8.0	4.3	8.0	7.3

Table 11 shows regional sales compared by sub sector¹². The final row shows the regional percentage of the UK total. These percentages do not change radically year-by-year, but over time the position of London and the South East has improved

¹² Because of the way that the rounding of figures is managed, there may be some small differences between graphics and table totals for the regions

Table 12: UK LCEGS Regional Companies 2011/12

	Level 2	East Midlands	East of England	London	N Ireland	North East	North West	Scotland	South East	South West	Wales	West Midlands	Yorks & Humber
Environmental	Air Pollution	12	57	32	5	9	145	118	59	19	2	6	32
	Contaminated Land	44	51	75	10	14	91	37	27	30	10	13	40
	Environmental Consultancy	23	16	99	3	3	68	16	53	8	3	57	26
	Environmental Monitoring	0	11	12	0	0	0	0	49	0	0	0	0
	Marine Pollution Control	0	0	7	0	0	1	3	33	1	0	0	11
	Noise & Vibration Control	0	6	49	0	0	3	0	29	11	0	0	6
	Recovery and Recycling	124	558	393	80	90	386	319	388	262	104	228	222
	Waste Management	144	202	481	102	64	141	190	322	228	62	158	197
	Water Supply/ Waste Water	162	277	661	134	79	264	328	446	388	283	327	413
Low Carbon	Additional Energy Sources	41	61	57	16	26	70	43	39	34	22	36	57
	Alternative Fuel Vehicle	205	765	573	192	431	696	252	770	540	192	818	650
	Alternative Fuels	748	885	815	232	380	840	875	944	813	252	690	298
	Building Technologies	469	556	927	162	297	625	440	1,076	547	355	338	523
	Carbon Capture & Storage	5	15	12	4	4	17	12	4	6	4	4	10
	Carbon Finance	6	5	1,910	1	1	5	5	11	5	1	6	5
	Energy Management	99	73	182	45	63	130	57	122	154	59	132	108
Renewables	Nuclear Power	59	185	160	18	53	242	223	297	205	71	78	64
	Biomass	153	232	441	46	60	169	321	293	190	105	205	131
	Geothermal	295	436	926	220	164	311	315	485	326	284	316	382
	Hydro	21	22	59	9	8	16	13	48	15	9	28	13
	Photovoltaic	181	139	420	70	95	200	131	225	120	145	251	110
	Renewable Energy General Consultancy	13	21	29	9	12	26	18	30	18	12	19	18
	Wave & Tidal	0	10	8	0	0	1	3	11	0	0	0	0
	Wind	560	335	883	224	155	586	473	809	317	225	515	400
Total	3,364	4,918	9,211	1,582	2,008	5,033	4,192	6,570	4,237	2,200	4,225	3,716	
% Of Total	7	10	18	3	4	10	8	13	8	4	8	7	

Table 12 shows regional company levels compared by sub sector. The final row shows the regional percentage of the UK total and these show some differences to the regional sales figures.

Table 13: UK LCEGS Regional Employment 2011/12

	Level 2	East Midlands	East of England	London	N Ireland	North East	North West	Scotland	South East	South West	Wales	West Midlands	Yorks & Humber
Environmental	Air Pollution	645	998	901	519	600	1,118	1,036	840	811	416	534	879
	Contaminated Land	729	955	741	272	537	1,265	860	725	776	318	472	723
	Environmental Consultancy	638	501	903	374	285	792	571	868	474	355	753	694
	Environmental Monitoring	97	144	163	83	63	134	117	219	107	100	117	106
	Marine Pollution Control	77	77	118	51	58	104	91	154	87	37	73	99
	Noise & Vibration Control	129	180	296	119	115	153	119	197	175	148	131	181
	Recovery and Recycling	2,536	8,531	6,738	1,851	1,849	5,642	6,234	6,650	5,190	2,237	4,143	4,456
	Waste Management	2,658	4,124	10,138	1,871	1,259	2,557	3,794	5,977	4,314	1,219	3,025	3,904
	Water Supply/ Waste Water	3,155	5,088	13,907	2,577	1,609	4,855	6,631	8,662	7,348	5,210	6,182	7,586
Low Carbon	Additional Energy Sources	830	1,182	1,227	343	585	1,748	1,140	975	741	570	788	1,178
	Alternative Fuel Vehicle	3,810	13,190	9,257	3,402	6,844	12,415	4,322	13,592	9,176	3,336	15,297	9,770
	Alternative Fuels	13,281	15,163	19,241	3,713	6,149	16,758	15,713	18,606	14,389	4,483	10,860	5,165
	Building Technologies	8,198	9,186	15,977	3,000	5,716	11,379	8,273	20,093	8,913	6,289	6,291	9,084
	Carbon Capture & Storage	377	564	489	152	373	745	519	31	387	125	300	485
	Carbon Finance	67	108	23,527	25	45	111	122	191	106	35	71	64
	Energy Management	2,107	1,526	2,499	887	1,497	2,422	1,195	2,502	2,574	1,296	2,647	2,089
Renewables	Nuclear Power	1,683	3,796	4,279	492	1,304	5,017	3,942	5,967	4,274	1,510	1,879	1,756
	Biomass	3,322	4,884	8,568	1,248	1,602	3,887	6,510	5,592	3,648	2,538	4,142	2,865
	Geothermal	5,120	7,529	18,555	4,807	2,944	6,321	4,990	8,555	5,599	4,206	5,778	7,110
	Hydro	515	477	895	278	183	364	306	644	337	199	562	298
	Photovoltaic	3,036	2,683	9,887	1,384	1,671	3,322	2,556	4,159	2,242	2,612	4,510	2,237
	Renewable Energy General Consultancy	311	477	753	137	181	457	415	762	383	183	350	420
	Wave & Tidal	31	64	63	18	27	58	56	58	50	35	47	47
	Wind	8,968	5,321	14,441	4,048	3,120	11,763	8,190	13,767	5,587	3,826	8,342	6,689
Total	62,320	86,748	163,563	31,651	38,616	93,387	77,702	119,786	77,688	41,283	77,294	67,885	
	% Of Total	7	9	17	3	4	10	8	13	8	4	8	7

Table 13 shows regional employment levels compared by sub sector. The final row shows the regional percentage of the UK total and these show some differences to the regional sales figures. This means that some regions - East of England and London - are slightly more labour-efficient (when employment and sales ratios are compared) than other regions. This is generally because of the mix of regional activities.

5.3 UK LCEGS Regional Growth 2010/11 to 2011/12

Table 14 shows regional sales growth rates by sub sector. Overall London and the North West grew at a slightly faster rate than the rest of the UK. Most of the major variations in growth rates (negative or positive) relate to sub sectors that have a relatively small current UK economic value like Carbon Capture & Storage and Wave & Tidal.

Table 14: UK LCEGS Regional Sales Growth 2011/12 by Sub Sector

	Level 2	East Midlands	East of England	London	N Ireland	North East	North West	Scotland	South East	South West	Wales	West Midlands	Yorks & Humber
Environmental	Air Pollution	2.2	2.1	2.1	2.0	2.2	3.8	2.1	2.0	2.1	2.4	2.2	2.2
	Contaminated Land	2.9	2.5	3.2	3.1	3.1	4.1	2.8	2.5	3.1	4.0	3.6	2.9
	Environmental Consultancy	3.3	3.4	3.3	3.7	3.3	4.8	3.4	3.8	3.6	3.8	3.4	3.1
	Environmental Monitoring	4.2	3.6	3.8	4.4	3.4	4.7	2.6	3.5	3.9	3.9	3.5	3.9
	Marine Pollution Control	3.4	3.5	3.5	3.7	2.9	5.3	3.8	3.6	4.1	4.8	3.8	3.6
	Noise & Vibration Control	3.6	4.3	4.3	2.8	3.9	5.8	3.2	3.6	3.8	4.7	3.8	3.4
	Recovery and Recycling	3.4	3.6	3.4	3.5	3.5	5.2	3.2	3.5	3.2	3.6	3.2	3.6
	Waste Management	2.8	3.0	2.6	2.9	3.0	4.7	2.8	2.4	2.8	3.3	2.8	3.0
	Water Supply and Waste Water Treatment	1.7	1.9	1.7	1.9	1.8	3.7	1.8	1.6	1.7	1.8	1.8	1.6
Low Carbon	Additional Energy Sources	3.6	4.2	3.8	4.6	3.9	3.4	3.9	3.7	4.0	4.2	4.0	4.7
	Alternative Fuel Vehicle	4.7	4.0	4.3	3.8	4.0	5.2	4.3	3.5	3.6	4.2	4.6	3.9
	Alternative Fuels	5.3	5.3	4.9	5.3	5.1	7.9	6.2	5.3	5.0	5.6	7.0	5.6
	Nuclear Power	5.0	4.8	4.9	4.7	4.6	1.5	5.0	4.4	4.6	4.4	4.6	4.9
	Building Technologies	3.4	3.4	3.3	4.0	3.4	5.2	3.4	7.7	3.7	3.8	3.8	3.8
	Carbon Capture & Storage	7.0	6.0	6.8	7.9	7.9	8.8	7.2	6.1	6.7	7.5	8.3	9.7
	Carbon Finance	3.6	3.4	3.6	3.2	3.3	1.0	3.6	3.5	3.5	3.6	3.7	3.2
	Energy Management	2.9	1.8	2.9	3.1	1.7	3.4	1.5	1.7	1.6	2.0	3.3	2.6
Renewables	Biomass	5.2	4.7	5.3	4.5	5.1	6.9	5.1	4.7	5.0	5.5	5.1	5.1
	Geothermal	5.5	4.6	5.3	5.0	5.8	7.2	5.6	4.7	5.1	5.3	5.3	5.0
	Hydro	2.9	2.6	2.6	2.8	3.2	5.6	3.3	2.8	2.7	2.9	3.0	2.7
	Photovoltaic	6.3	6.7	7.2	6.4	5.8	8.2	7.0	5.9	6.0	6.5	6.1	5.8
	Renewable Energy General Consultancy	2.7	2.7	2.8	2.6	2.9	4.7	2.9	3.3	2.6	3.1	1.9	2.6
	Wave & Tidal	7.3	5.9	6.5	4.0	5.1	8.3	6.7	5.6	5.2	3.6	5.4	6.4
	Wind	7.4	7.6	6.6	7.7	7.1	9.4	8.7	7.0	7.4	6.8	7.1	7.9
	Total	5.1	4.5	5.2	4.7	4.6	5.7	5.0	4.3	4.2	4.6	5.0	4.5

In Figure 15 each LCEGS sub sector is shown as a 100% chart, but this time with each UK region representing a percentage of the UK value (due to comparative sizes not all sub sectors are visible).

Figure 15: UK LCEGS Sub Sector Sales Compared by Region 2011/12

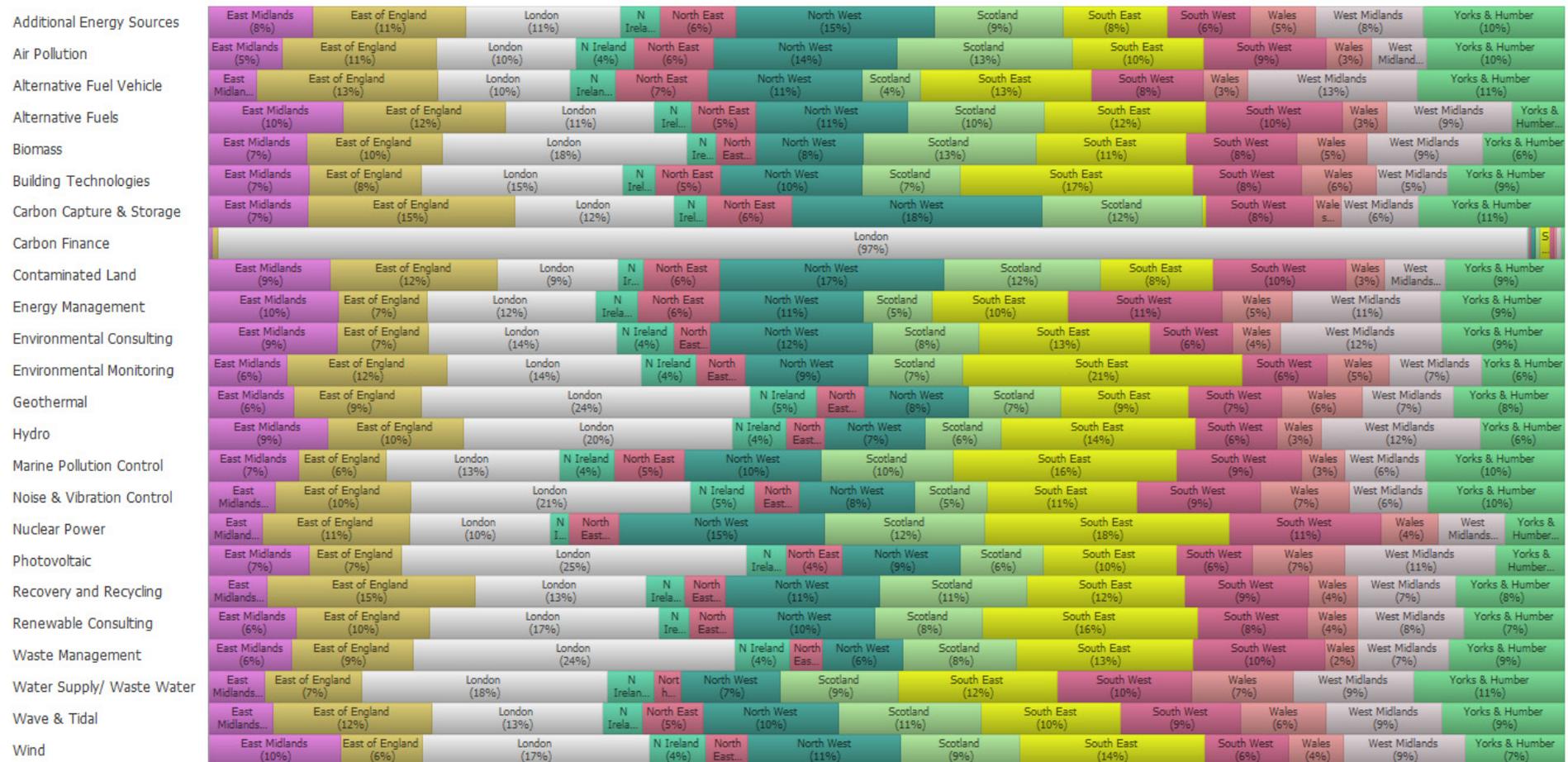


Figure 15 shows (in a more visual format) regional sales variations and specific regional strengths when compared with the rest of the UK i.e. London for Carbon Finance, South East for Environmental Monitoring, North West for Contaminated Land Reclamation and the East of England for Recovery & Recycling.

6. UK LCEGS by LEP

The 39 UK Local Economic Partnerships (LEP's) are included in the LCEGS report for the first time in 2011/12. Each LEP has been calculated by aggregating Local Authority level data for LCEGS using nationally agreed LEP boundaries. Some Local Authorities are attached to more than one LEP, so there is an element of double counting in the figures that follow. For further information about LEP's go to <http://www.lepnetwork.org.uk/leps.html>. or <https://www.gov.uk/government/policies/supporting-economic-growth-through-local-enterprise-partnerships-and-enterprise-zones>.

Figure 16 compares all LEPs by Sales, representing each LEP as a percentage of all LEPs. The first thing of note is the disparity between London, South East, Greater Manchester and Leeds City Region and all other LEPs- four LEPs (10%) account for 37% of the Sales value.

Figure 16: Comparison between LEPs (based upon Sales) 2011/12

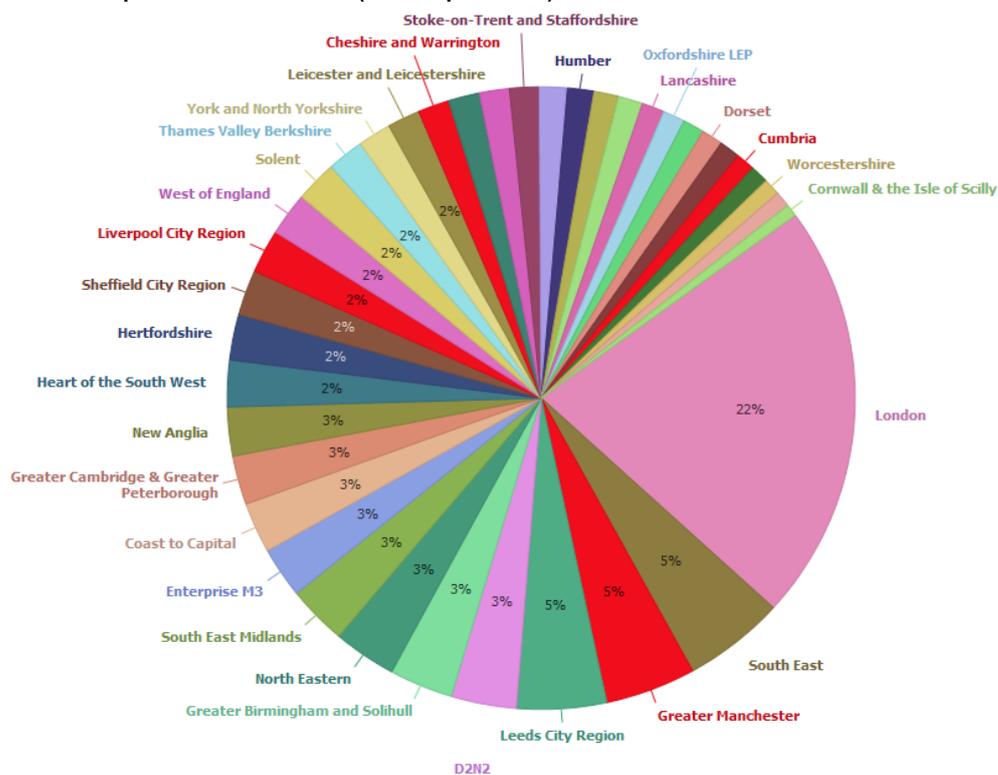


Table 15 shows that the ratio for Sales is also reflected in the values for Companies and Employment. There are very wide disparities between London (£25.4bn- the same value as for the London region) and Cornwall & the Isle of Scilly (£732m).

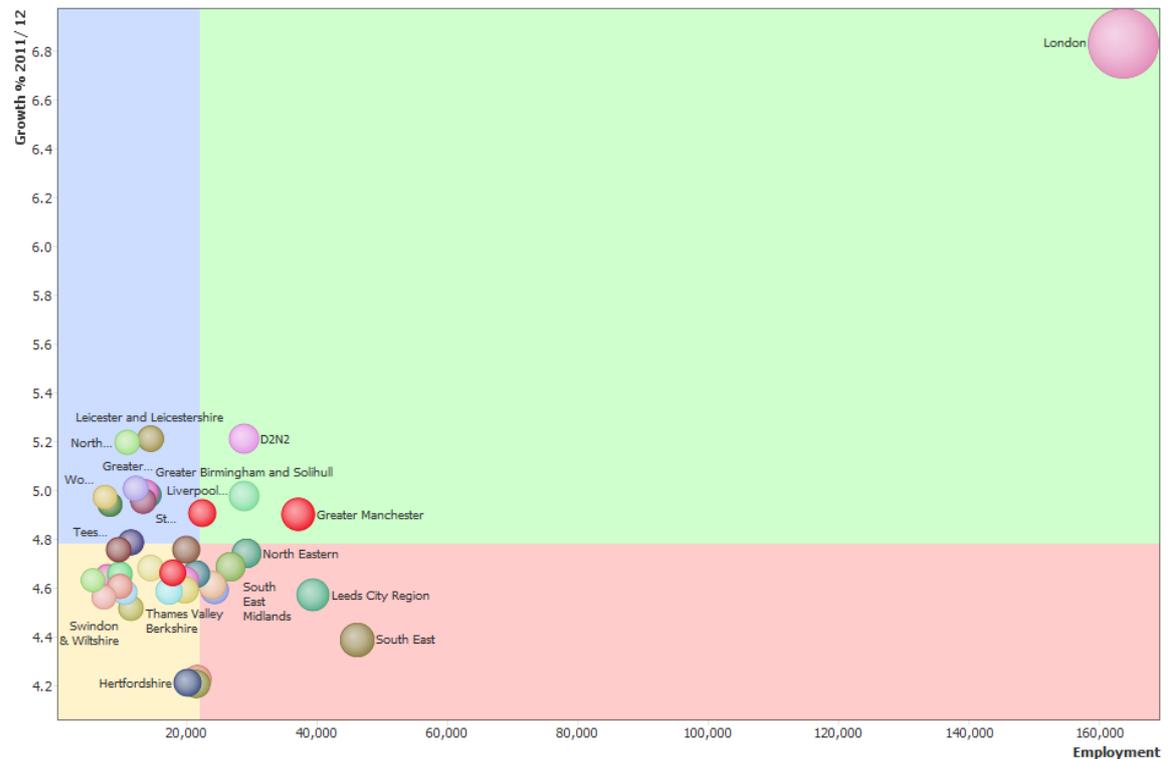
Table 15: Sales, Companies and Employment by LEP (2011/12)

LEP	Sales £m	Companies	Employment
Black Country	1,870.73	770	14,106
Buckinghamshire Thames Valley	940.03	405	7,391
Cheshire and Warrington	1,888.33	849	17,952
Coast to Capital	3,061.62	1,298	23,862
Cornwall & the Isle of Scilly	732.54	304	5,605
Coventry & Warwickshire	1,803.06	756	13,758
Cumbria	1,138.48	397	8,191
D2N2	3,924.50	1,556	28,716
Dorset	1,279.65	535	9,754
Enterprise M3	3,083.51	1,317	24,201
Gloucestershire	1,282.89	536	9,776
Greater Birmingham and Solihull	3,833.24	1,580	28,899
Greater Cambridge & Greater Peterborough	2,970.20	1,230	21,579
Greater Lincolnshire	1,672.00	665	12,207
Greater Manchester	5,445.85	1,941	37,053
Heart of the South West	2,827.92	1,177	21,479
Hertfordshire	2,776.38	1,153	20,132
Humber	1,590.81	635	11,457
Lancashire	1,351.50	647	7,953
Leeds City Region	5,395.09	2,169	39,335

LEP	Sales £m	Companies	Employment
Leicester and Leicestershire	1,963.35	780	14,383
Liverpool City Region	2,651.19	1,228	22,307
London	25,418.65	9,255	163,671
New Anglia	2,950.35	1,224	21,399
North Eastern	3,794.14	1,530	29,096
Northamptonshire	1,481.57	592	10,868
Oxfordshire LEP	1,324.34	572	10,418
Sheffield City Region	2,737.06	1,091	19,887
Solent	2,515.03	1,082	19,706
South East	6,112.59	2,582	46,089
South East Midlands	3,574.67	1,486	26,695
Stoke-on-Trent and Staffordshire	1,777.65	730	13,387
Swindon & Wiltshire	1,482.79	623	11,372
Tees Valley	1,257.88	507	9,640
Thames Valley Berkshire	2,214.64	950	17,356
The Marches	1,097.04	453	8,279
West of England	2,608.72	1,088	19,822
Worcestershire	1,004.94	411	7,569
York and North Yorkshire	1,999.34	800	14,487

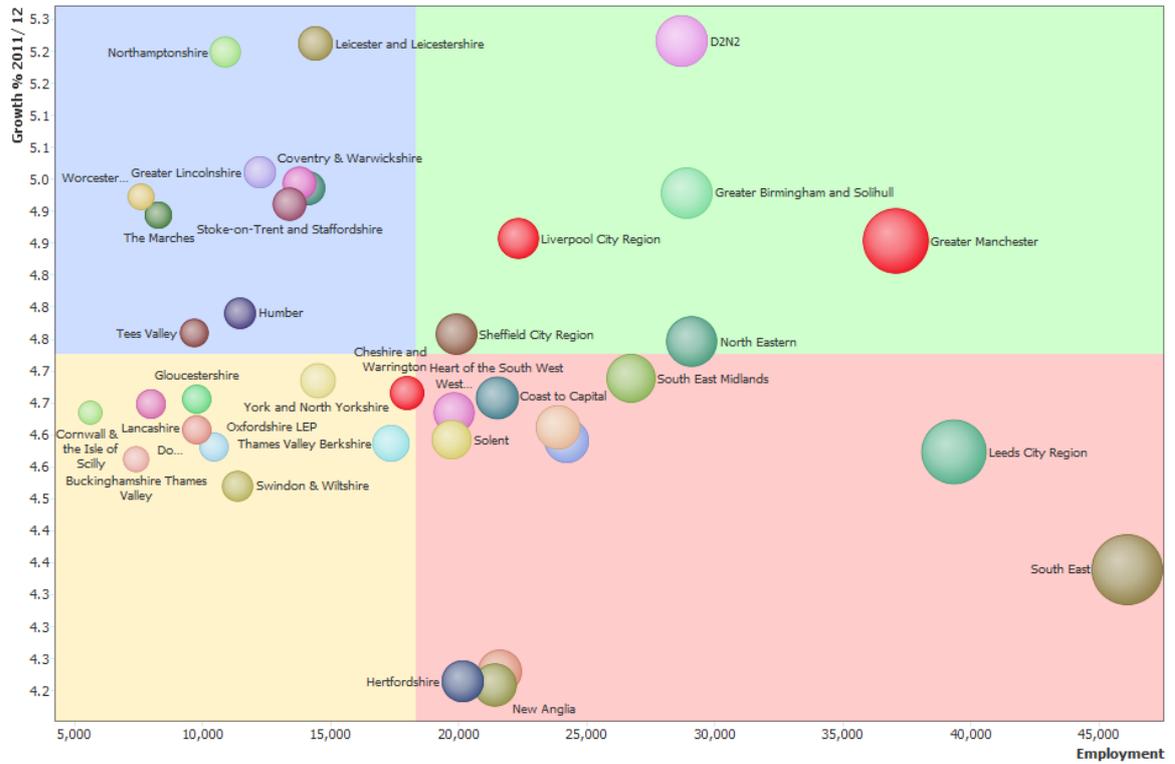
Figure 17 represents the differences using the same bubble chart conventions as Figure 10, with London causing all other LEPs to cluster bottom left on the chart.

Figure 17: All LEPs compared by Growth, Employment and Sales for 2011/12



However, when London is removed from the analysis (Figure 18), the distribution of the LEPs is more revealing - as LEP forecast growth is shown to vary between 4.2% and 5.3%, based upon the different mix of LCEGS activities.

Figure 18: LEPs (minus London) compared by Growth, Employment and Sales for 2011/12



7. UK LCEGS Imports

7.1 Introduction

LCEGS imports are important because they are a measure of products and services that:

- cannot be purchased from the UK (a capability or capacity gap)
- are purchased into the UK as part of final UK outputs (global supply chain links)
- represent a possible inward investment opportunity
- are not purchased from the UK because of cheaper prices from overseas

In the following sub section imports are analysed for the last three years. This analysis focuses on imports from all Top 53 countries to the UK. These countries account for approximately 90% of all UK imports.

7.2 UK LCEGS Imports by Year

The total for UK LCEGS imports in 2011/12 is **£7 billion**. This shows an annual increase from 2010/11 of **2.8%**, compared with increases from 2009/10 to 2010/11 of **3.1%**.

Table 16 shows the three year import values by sub sector. The highest imports are for Alternative Fuels, Building Technologies, Water/ Waste Water, Wind, Geothermal and Photovoltaic.

Table 16: LCEGS Imports Three Year Trend by Sub Sector £m

Level 2		2009/ 10	2010/ 11	2011/ 12	% Change 2009/ 10 to 2010/ 11	% Change 2010/ 11 to 2011/ 12
Environmental	Air Pollution	114	117	121	3.3	2.8
	Contaminated Land	56	58	59	3.3	2.7
	Environmental Consultancy	13	14	14	3.2	2.9
	Environmental Monitoring	12	12	13	3.2	2.6
	Marine Pollution Control	2	2	2	3.0	5.3
	Noise & Vibration Control	19	20	20	3.2	2.9
	Recovery and Recycling	263	272	279	3.2	2.8
	Waste Management	321	326	336	1.6	2.8
	Water Supply and Waste Water Treatment	872	900	926	3.2	2.8
Low Carbon	Additional Energy Sources	103	110	113	6.9	2.7
	Alternative Fuel Vehicle	387	376	387	-2.8	2.8
	Alternative Fuels	674	720	740	6.7	2.9
	Building Technologies	786	812	835	3.3	2.8
	Carbon Capture & Storage	54	61	63	12.8	2.7
	Carbon Finance	95	99	101	3.5	2.7
	Energy Management	193	199	205	3.2	2.8
	Nuclear Power	81	79	81	-2.0	2.7
Renewables	Biomass	456	468	481	2.6	2.8
	Geothermal	678	700	720	3.2	2.8
	Hydro	39	40	41	3.2	2.9
	Photovoltaic	649	670	689	3.3	2.8
	Renewable Energy General Consultancy	65	66	68	0.5	2.8
	Wave & Tidal	5	5	5	3.2	3.3
	Wind	697	717	736	2.9	2.8
Total	6634	6843	7035	3.1	2.8	

Of the total £7bn, 66% is accounted for by: Water/ Waste Water (13%), Building Technologies (12%), Alternative Fuels (11%) and Wind, Photovoltaic and Geothermal (10% each). These percentages are essentially unchanged from the previous year, despite the small drop in total imports.

7.3 UK and Regional Imports by Country

Figure 19 shows the values (£m) for imports from the Top 13 countries i.e. imports over £200m. China leads with £475m (7%), followed by Hong Kong¹³ £415m (6%) and Spain £319m (5%). The Top 13 countries account for £3.65bn of imports or 52% of the total.

¹³ Much of which will have originated from China and Asia

Figure 19: UK LCEGS Imports 2011/12 £m

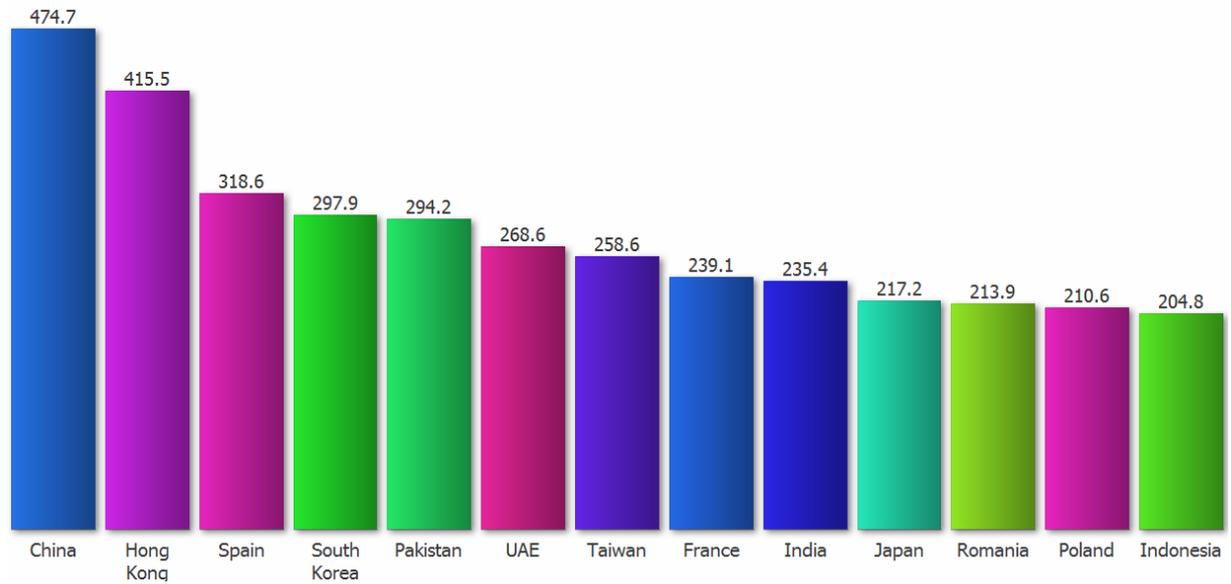


Figure 20 shows UK imports by region and Devolved Administration. London accounts for 18% of all imports, followed by South East (15%), North West (10%), East of England (10%) and the Scotland, South West and West Midlands (8%).

Figure 20: UK LCEGS Imports by Region 2011/12 £m

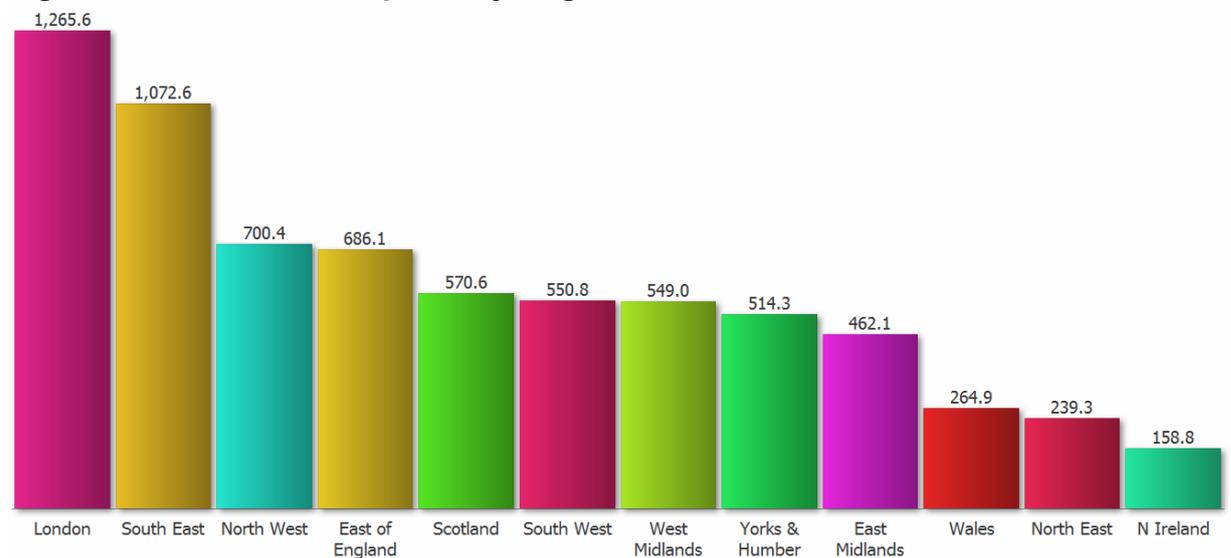


Table 17 (below) is a heat map¹⁴ (colour coded red for low through to green for high value) and shows the highest value of UK imports at Level 3 for 20 of the Top 53 countries.

¹⁴ All heat mapping in this report is derived from Microsoft Excel rules for conditional formatting where Red starts at 0, Green ends at the highest value in the data set and orange is set at the 50% Median. All values between are shown as graduated shades between green and red.

Table 17: UK LCEGS Imports 2011/12 at Level 3 £m

Level 2	Level 3	Brazil	Chile	China	Denmark	France	Hong Kong	Hungary	India	Indonesia	Japan	Pakistan	Poland	Portugal	Romania	S Korea	Spain	Taiwan	Thailand	Turkey	UAE
Alternative Fuel Vehicle	Alternative Fuels (main Stream) for Vehicles	3	9	12	32	4	22	23	8	29	10	16	7	7	5	12	7	4	8	6	4
Alternative Fuels	Main Stream Bio Fuels	2	3	5	1	2	7	2	3	1	2	8	2	1	1	1	22	6	1	4	4
Alternative Fuels	Other Bio Fuels	11	17	26	6	9	46	11	25	7	10	50	13	7	11	9	22	32	9	25	24
Alternative Fuels	Other Fuels	2	2	4	1	2	7	2	3	1	2	7	3	1	1	2	0	7	2	4	3
Biomass	Biomass Energy Systems	4	5	17	6	8	8	5	7	7	8	11	5	3	5	11	5	5	5	6	5
Biomass	Biomass Furnace Systems	1	2	4	2	3	3	1	3	2	3	4	2	1	1	3	1	2	1	2	1
Biomass	Boilers and related Systems	2	5	13	5	6	7	4	6	6	6	9	5	3	4	8	9	4	4	5	4
Building Technologies	Doors	4	4	13	4	6	15	4	6	4	8	12	7	3	6	5	6	11	6	5	12
Building Technologies	Insulation and Heat Retention Materials	4	4	15	4	5	16	5	6	4	8	11	8	2	10	6	7	10	6	8	14
Building Technologies	Windows	4	6	15	4	6	18	6	5	5	9	13	9	3	8	6	24	12	9	9	13
Geothermal	Consulting & Related Services	2	5	7	4	3	6	3	3	6	3	0	3	2	3	4	5	5	3	2	7
Geothermal	Manufacture and Supply of Specialist Equipment	2	5	8	5	4	7	3	4	7	3	1	3	4	3	4	3	5	4	3	8
Geothermal	Suppliers of Systems	3	6	9	6	3	8	3	4	8	3	1	3	4	4	6	3	6	4	3	9
Geothermal	Whole Systems Manufacture	6	12	24	13	8	17	8	11	15	8	1	8	8	10	10	24	14	9	6	20
Photovoltaic	Other Related Equipment and Chemicals	6	2	15	1	7	9	0	6	1	5	8	4	1	8	11	4	7	1	3	7
Photovoltaic	Photovoltaic Cells	4	2	16	1	6	8	1	5	1	4	8	4	1	7	11	3	5	1	4	6
Photovoltaic	Systems & Equipment	10	3	35	1	12	18	1	12	2	10	14	8	2	15	22	39	12	1	8	15
Recovery and Recycling	Waste Collection	3	1	8	1	5	5	1	4	1	5	4	5	1	3	3	6	1	2	4	4
Waste Management	Construction/ Operation of WasteFacilities	2	3	7	7	30	8	1	4	2	1	5	3	3	3	6	7	2	3	2	1
Waste Management	Equipment For Waste Treatment	2	2	6	6	22	7	1	3	1	1	4	3	3	2	5	5	2	3	2	1
Water/ Waste Water	Engineering	6	9	11	4	6	10	11	7	13	5	4	7	14	8	10	6	18	9	3	10
Water/ Waste Water	Water Treatment and Distribution	17	25	35	13	23	37	34	20	40	16	14	25	43	24	35	18	12	27	7	32
Wind	Large Wind Turbine	5	1	23	4	3	15	4	10	3	13	9	11	3	9	13	8	10	7	10	5
Wind	Small Wind Turbine	5	1	16	3	3	12	2	8	2	11	8	9	2	7	10	5	7	6	8	4
Wind	Wind Farm Systems	7	2	25	5	4	20	4	11	3	16	11	12	3	10	16	18	10	9	10	6

Table 17 shows a much more varied picture of imports, with high values for Other Bio Fuels (Hong Kong, Pakistan and Taiwan) Water Treatment and Distribution (many countries), and Photovoltaic Systems & Equipment (China and Spain).

8. UK LCEGS Exports

8.1 Export Introduction

In this section of the report we look at the export performance of the UK LCEGS Sector for 2011/12. This section analyses the existing trading relationships for the UK both by market and by destination country. The focus is on where strong export relations exist today and whether these areas correspond to the most attractive future global markets. The analysis includes both Tangibles (products) and Intangibles (services).

8.2 UK LCEGS Exports by Year

The total for UK LCEGS exports in 2011/12 is **£12.2 billion**. This shows an annual increase from 2010/11 of 3.7% compared with an increase from 2009/10 to 2010/11 of **3.9%**,

In Table 18 we compare UK export values for 2009/10 to 2011/12 by sub-sector.

Table 18: UK LCEGS Exports for 2009/10 to 2011/12 £m

	Level 2	2009/ 10	2010/ 11	2011/ 12	% Diff 2009/ 10 to 2010/ 11	% Diff 2010/ 11 to 2011/ 12
Environmental	Air Pollution	161	169	175	4.5	3.8
	Contaminated Land	87	91	95	4.5	3.7
	Environmental Consultancy	40	41	43	4.4	3.8
	Environmental Monitoring	19	20	21	4.5	3.8
	Marine Pollution Control	3	3	3	4.2	3.3
	Noise & Vibration Control	32	34	35	4.5	3.7
	Recovery and Recycling	558	583	605	4.5	3.7
	Waste Management	510	520	540	2.0	3.8
	Water Supply and Waste Water Treatment	1,165	1,218	1,263	4.5	3.8
Low Carbon	Additional Energy Sources	178	173	180	-2.6	3.8
	Alternative Fuel Vehicle	648	638	662	-1.6	3.8
	Alternative Fuels	1,131	1,222	1,266	8.0	3.6
	Building Technologies	1,369	1,430	1,484	5.7	3.7
	Carbon Capture & Storage	65	68	71	4.5	3.7
	Carbon Finance	152	163	169	4.4	3.8
	Energy Management	328	343	356	7.0	3.8
	Nuclear Power	177	187	194	4.5	3.9
Renewables	Biomass	699	724	752	3.7	3.8
	Geothermal	962	1,005	1,043	4.5	3.8
	Hydro	65	68	71	4.6	3.8
	Photovoltaic	1,284	1,341	1,391	4.5	3.7
	Renew able Energy General Consultancy	98	66	68	-32.7	3.8
	Wave & Tidal	8	8	9	4.5	3.4
	Wind	1,587	1,655	1,718	4.3	3.8
	Total	11,326	11,770	12,211	3.9	3.7

Table 18 shows that the highest value exports are consistently - Alternative Fuels, Building Technologies, Photovoltaic, Wind and Water/ Waste Water. They account for £7.1bn in 2010/11 or 58.3% of all exports.

The last two Columns show the year-on-year increases in exports. What is of most interest in the growth in annual exports is that while the overall percentage for the past two years remains broadly the same, the way in which those exports are achieved across the LCEGS sub sectors differs markedly

Table 19 shows exports as a percentage of total LCEGS sales for the last three years. Surprisingly, the percentage has remained at between 9.5% and 9.7% for all three years despite year-by-year fluctuations at the sub sector level. While this figure is consistent, but showing slow decline, LCEGS is not one of the UK's strongest exporting sectors (compared with more mature sectors like Aerospace and Marine).

Table 19 shows that some sub sector products and services are more successful at exporting than others. The highest ratios of exports to sales for 2011/12 are Photovoltaic (24%), Air Pollution Control (17%), Noise & Vibration Control (15%), Water/ Waste Water Treatment (15%) and Additional Energy Sources, Biomass, Carbon Capture & Storage, Hydro and Renewable Consulting (13%).

Table 19: UK LCEGS Export as a Percentage of Total Sales (£m)

		2009/ 10			2010/ 11			2011/ 12		
Level 2		Sales £m	Export	Exports as % of Sales	Sales £m	Export	Exports as % of Sales	Sales £m	Export	Exports as % of Sales
Environmental	Air Pollution	997	161	16.2	1,018	169	16.6	1,042	175	16.8
	Contaminated Land	963	87	9.1	990	91	9.2	1,021	95	9.3
	Environmental Consultancy	794	40	5.0	821	41	5.0	851	43	5.1
	Environmental Monitoring	160	19	12.0	165	20	12.2	172	21	12.2
	Marine Pollution Control	129	3	2.0	134	3	2.0	139	3	2.0
	Noise & Vibration Control	220	32	14.6	229	34	14.7	238	35	14.6
	Recovery and Recycling	6,936	558	8.0	7,174	583	8.1	7,435	605	8.1
	Waste Management	5,071	510	10.1	5,210	520	10.0	5,359	540	10.1
	Water Supply and Waste Water Treatment	8,231	1,165	14.2	8,373	1,218	14.5	8,529	1,263	14.8
Low Carbon	Additional Energy Sources	1,297	178	13.7	1,347	173	12.9	1,400	180	12.8
	Alternative Fuel Vehicle	12,915	648	5.0	13,431	638	4.7	13,993	662	4.7
	Alternative Fuels	17,176	1,131	6.6	18,107	1,222	6.7	19,151	1,266	6.6
	Building Technologies	14,129	1,369	9.7	14,794	1,430	9.7	15,440	1,484	9.6
	Carbon Capture & Storage	497	65	13.1	514	68	13.2	534	71	13.2
	Carbon Finance	5,925	152	2.6	6,319	163	2.6	6,749	169	2.5
	Energy Management	2,719	328	12.1	2,812	343	12.2	2,903	356	12.2
	Nuclear Power	3,798	177	4.7	3,873	187	4.8	3,960	194	4.9
	Biomass	5,454	699	12.8	5,728	724	12.6	6,025	752	12.5
Renewables	Geothermal	10,186	962	9.4	10,701	1,005	9.4	11,271	1,043	9.3
	Hydro	529	65	12.4	544	68	12.6	561	71	12.7
	Photovoltaic	4,997	1,284	25.7	5,314	1,341	25.2	5,667	1,391	24.5
	Renewable Energy General Consultancy	506	98	19.3	520	66	12.7	535	68	12.8
	Wave & Tidal	82	8	9.7	86	8	9.7	91	9	9.4
	Wind	13,070	1,587	12.1	14,017	1,655	11.8	15,076	1,718	11.4
	Total	116,779	11,326	9.7	122,222	11,770	9.6	128,142	12,211	9.5

8.3 UK and Regional Exports by Country

The second “dimension” of export analysis is by country. In Figure 21 we show that the Top 13 Export destinations for the UK. The leading destinations are China (7%), Hong Kong (5%), Spain (4.2%), South Korea (4%) and Taiwan (3.6%). This ranking of export markets has remained reasonably consistent for each of the last three years.

Figure 21: UK LCEGS Exports 2011/12 £m

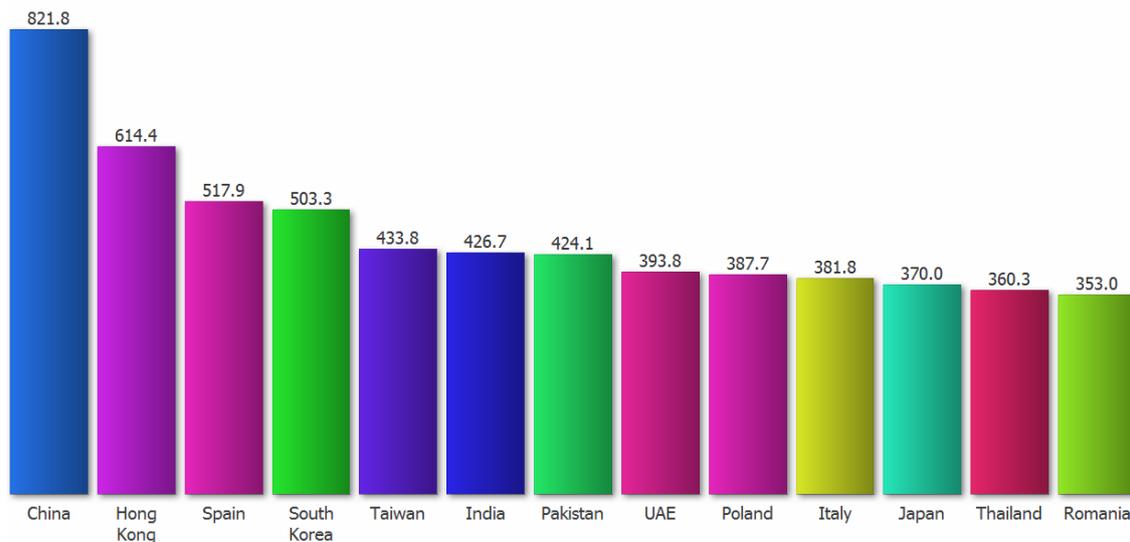


Figure 22 shows UK exports by region and Devolved Administration. London accounts for 18% of all exports, followed by South East (15%), North West (10%), East of England (10%) and the South West, Scotland and West Midlands (8%).

Figure 22: UK LCEGS Exports by Region 2011/12 £m

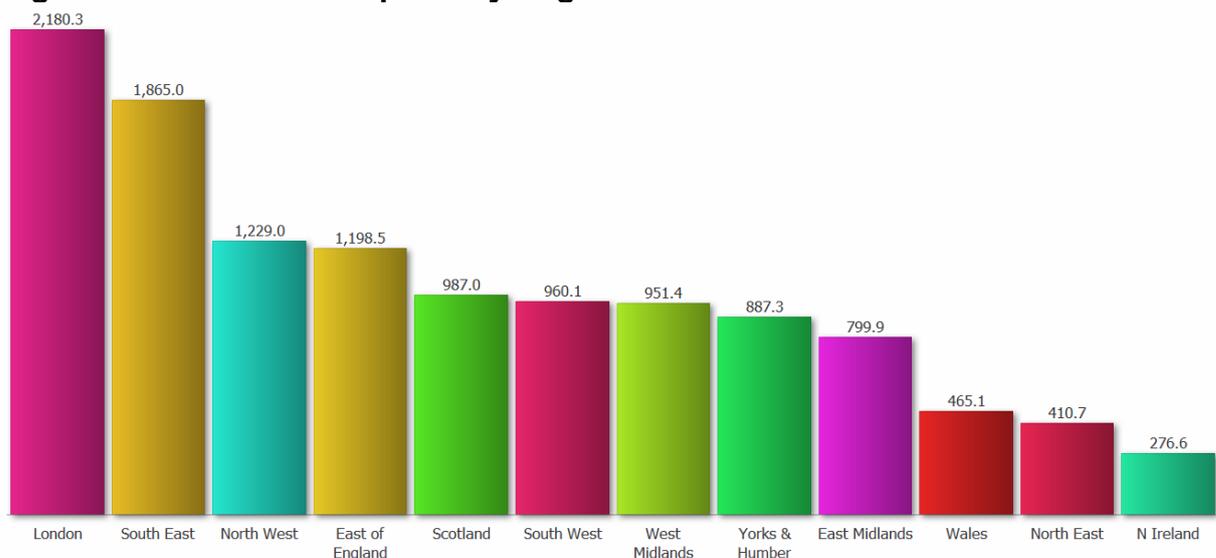


Table 20 is a heat map colour coded from red (0) to green (£75m) with shades of orange inbetween and shows the highest value of UK exports at Level 3 for 24 market activities for 25 of the Top 53 countries.

A vertical analysis of the table confirms the importance of the Top 13 countries and a horizontal analysis highlights at least six significant export activities that are important to most of the 25 countries. These are:

- Mainstream Alternative Vehicle Fuels
- Other Bio Fuels
- Water Treatment & Distribution
- Photovoltaic Systems & Equipment
- Large Wind Turbines
- Wind Farm Systems.

When vertical and horizontal analysis is applied some niche markets (outside of the Top 13 countries) appear - Water Treatment & Distribution in Portugal, Indonesia, Saudi Arabia and Thailand and Photovoltaic Systems & Equipment to Chile and Spain.

Table 20: UK LCEGS Exports 2010/11 at Level 3 £m

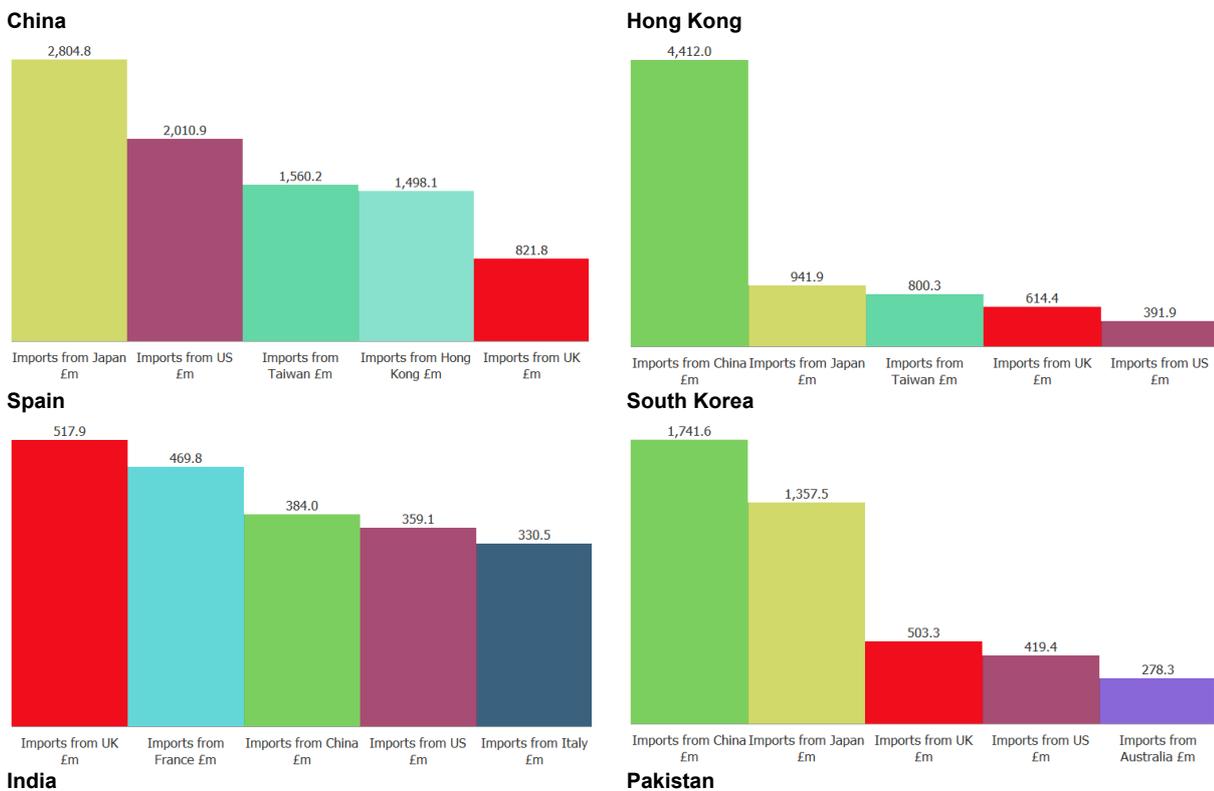
Level 2	Level 3	Chile	China	Denmark	France	Hong Kong	Hungary	India	Indonesia	Italy	Japan	Malaysia	Netherlands	Pakistan	Poland	Portugal	Romania	Saudi Arabia	Singapore	South Korea	Spain	Taiwan	Thailand	Turkey	UAE	US
Recovery and Recycling	Waste Collection	8	16	10	9	10	9	7	10	8	9	7	4	10	11	4	8	7	8	7	12	3	10	8	8	11
Waste Management	Construction/ Operation of Waste Facilities	6	15	8	5	17	2	8	10	5	3	7	5	9	6	8	7	15	7	13	14	6	3	5	3	9
Waste Management	Equipment For Waste Treatment	4	11	5	3	11	1	6	6	3	2	4	3	5	5	5	4	10	5	8	9	3	2	4	2	6
Water/ Waste Water Treatment	Engineering	13	13	7	11	16	8	11	21	7	8	6	8	6	10	22	8	13	3	14	12	31	17	4	13	9
Water/ Waste Water Treatment	Water Treatment and Distribution	36	40	19	34	54	21	32	58	20	23	18	24	18	33	61	26	44	9	42	32	15	48	12	40	27
Alternative Fuel Vehicle	Alternative Fuels (main Stream) for Vehicles	35	28	48	6	40	6	17	7	11	17	14	4	35	15	22	17	23	22	24	9	9	25	12	11	14
Alternative Fuels	Other Bio Fuels	5	75	15	15	49	20	64	13	22	13	33	20	49	25	16	22	34	26	18	44	43	38	34	34	21
Alternative Fuels	Other Fuels	1	12	3	3	8	4	9	2	3	3	6	4	7	5	2	4	7	5	3	0	10	8	5	5	2
Building Technologies	Doors	9	21	2	9	19	10	8	10	21	17	9	5	13	12	4	10	6	18	13	12	19	9	7	18	10
Building Technologies	Insulation and Heat Retention Materials	12	29	3	11	30	15	11	13	28	22	14	7	16	21	4	19	10	25	20	17	21	12	14	27	15
Building Technologies	Monitoring and Control Systems	4	9	1	3	11	5	3	4	11	8	4	2	6	6	2	6	3	8	6	6	9	4	5	8	5
Building Technologies	Window s	12	21	2	9	24	13	7	11	27	19	10	6	15	16	4	12	8	21	14	46	19	12	12	18	12
Biomass	Biomass Energy Systems	3	23	7	13	14	8	17	4	7	11	11	1	19	10	3	9	8	6	18	8	12	14	13	11	12
Biomass	Boilers and related Systems	2	15	4	8	10	6	11	3	5	7	7	1	14	8	2	5	5	6	11	11	7	8	9	7	8
Geothermal	Consulting & Related Services	3	13	2	4	7	2	5	2	5	3	6	8	1	4	2	6	4	4	7	6	7	3	4	9	5
Geothermal	Manufacture of Specialist Equipment	3	17	3	5	8	3	8	3	7	4	8	11	1	5	3	7	5	5	8	5	8	5	6	11	7
Geothermal	Suppliers of Systems	4	18	4	5	10	3	7	3	6	4	8	10	1	5	3	7	5	5	9	4	9	5	5	11	6
Geothermal	Whole Systems Manufacture	8	52	8	14	23	7	20	7	15	10	22	21	3	13	6	17	15	12	19	36	21	12	13	29	17
Photovoltaic	Other Related Equipment and Chemicals	2	28	1	12	15	4	10	2	12	14	13	6	16	12	5	12	2	8	15	5	10	1	10	9	10
Photovoltaic	Photovoltaic Cells	3	31	1	13	16	4	11	2	13	14	16	6	19	12	7	15	2	8	15	6	10	1	12	10	12
Photovoltaic	Systems & Equipment	5	66	2	23	32	8	23	3	25	31	32	13	32	25	12	26	5	18	30	54	22	2	23	21	21
Wind	Large Wind Turbine	21	49	42	6	25	18	18	21	17	20	22	22	16	18	26	16	10	10	31	14	18	24	17	11	11
Wind	Small Wind Turbine	12	28	27	3	16	10	12	12	10	14	13	14	12	12	14	9	7	6	21	6	10	18	10	7	7
Wind	Wind Farm Systems	26	55	47	8	30	22	21	21	20	26	24	26	20	22	30	18	13	12	41	28	19	34	19	13	16

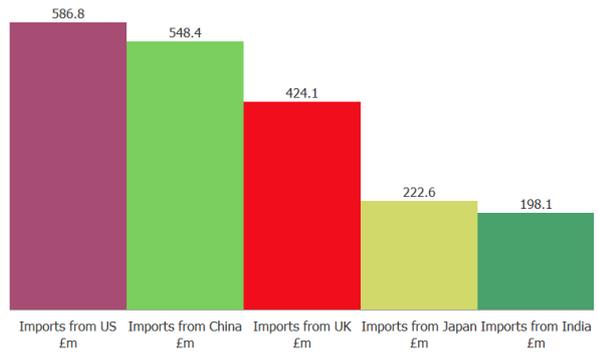
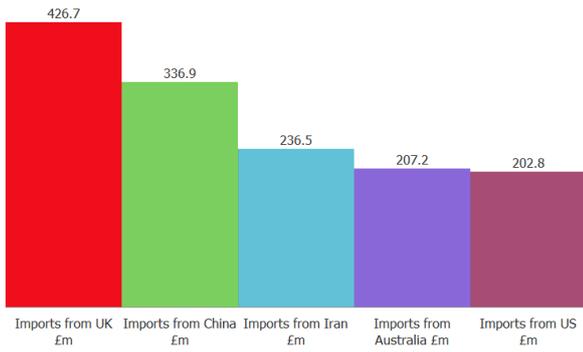
8.4 UK LCEGS Exports by Country and by Market

In the previous sub section, the focus was on the VALUE of exports into destination countries. In this sub section the focus is on the UK ranking in relation to a country's TOTAL imports. For this analysis total import and export data is compiled for all Top 53 countries (UK included) and UK exports are compared with all other Top 52 countries into a single country. This means that UK export performance can be ranked in relation to competing exporters for any of the major economies. This analysis adds a competitive dimension to the value of current export performance and is an indicator of the quality of trading relationship that exists.

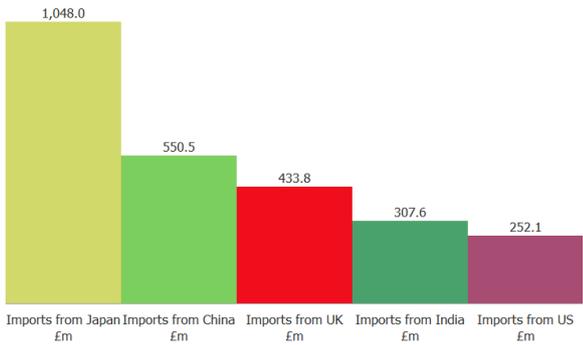
In Figure 23 we show a selection of 11 countries (from the Top 13) where UK exports are ranked within the top five sources of imports for those countries: Spain and India (1st); UAE, Poland and Romania (2nd); South Korea, Pakistan, Malaysia and Taiwan (3rd); Hong Kong (4th) and China (5th). These rankings are unchanged from the previous year. The UK ranking has dropped from 5th to 7th for two countries- Japan and Italy- since 2010/11. Each graphic shows the comparative value of imports and ranking of the UK against its international competitors. In each case the UK is the leading European exporter to these countries.

Figure 23: Examples of Import Ranking Exercise for LCEGS £m

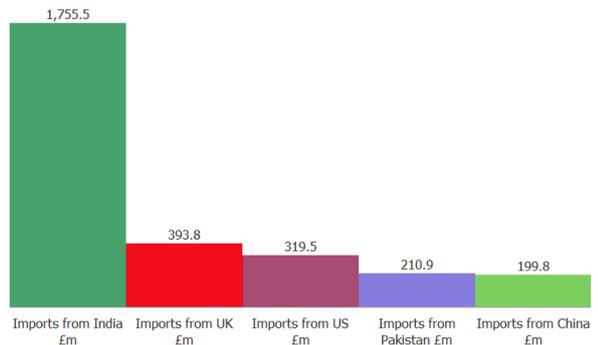




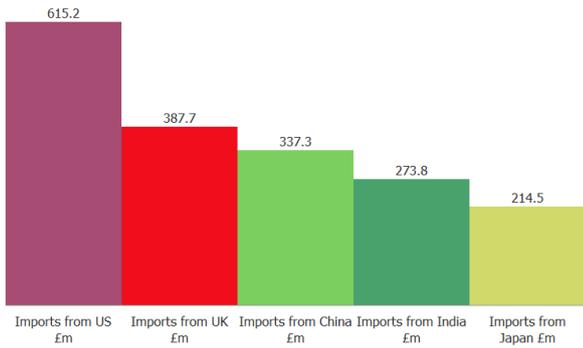
Taiwan



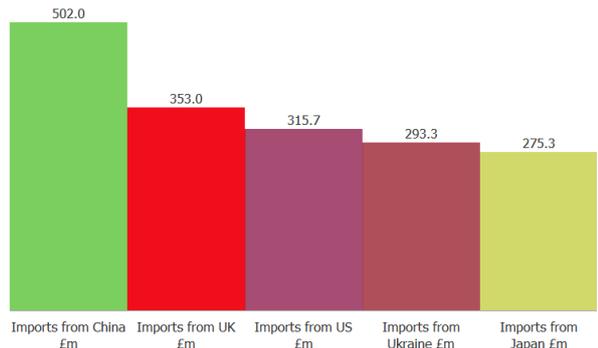
UAE



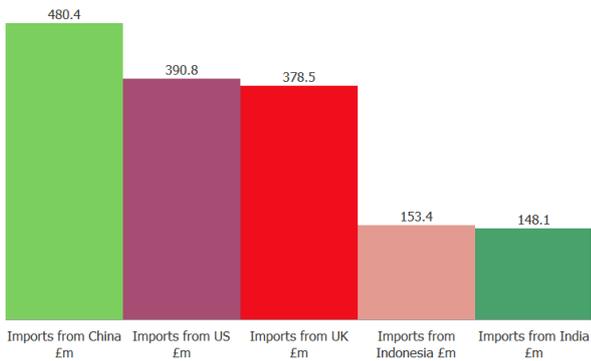
Poland



Romania



Malaysia



Appendix A

A. Glossary of Terms

The **Low Carbon and Environmental Goods and Services** (LCEGS) sector is divided into three main activity blocks - Environmental, Renewable Energy and Low Carbon (Level 1). These are in turn divided into 24 subsectors (Level 2):

- The Environmental activity block includes Air Pollution Control, Contaminated Land Reclamation & Remediation, Environmental Consultancy, Environmental Monitoring, Marine Pollution Control, Noise & Vibration Control, Recovery & Recycling, Waste Management and Water Supply/ Waste Water Treatment.
- The Renewable Energy activity block includes Biomass, Geothermal, Hydro, Photovoltaic, Renewable Energy Consultancy, Wave & Tidal and Wind.
- The Low Carbon activity block includes Additional Energy Sources, Alternative Fuels & Vehicles, Alternative Fuels, Building Technologies, Carbon Capture & Storage, Carbon Finance, Energy Management and Nuclear Power.

Environmental activities include 9 sub sectors (Level 2), divided into 47 Level 3 activity groupings:

- Air Pollution includes indoor and industrial air quality and emissions control.
- Contaminated Land Reclamation/ Remediation includes Decommissioning of Nuclear Sites.
- Environmental Consulting includes consulting, training & other services.
- Environmental Monitoring includes analysis, monitoring and instrumentation.
- Marine Pollution and Noise & Vibration Control both include abatement, consulting and R&D.
- Recovery & Recycling includes Waste Collection and various recycling processes
- Waste Management includes Waste Treatment Facilities & Equipment, consulting and R&D
- Water Supply and Waste Water Treatment includes treatment, distribution, consulting and R&D.

Low Carbon includes 8 sub sectors (Level 2), divided into 49 Level 3 activity groupings:

- Carbon Finance includes Credits Finance, Fund Management, Trading and Research
- Carbon Capture & Storage includes Capture, Pipeline, Storage and Engineering.
- Energy Management includes Lighting, Heating & Ventilation and Engineering.
- Nuclear Power includes Construction, Commissioning, Operations, Engineering and Testing Services.
- Additional Energy Sources include Energy Storage Research, Fuel Cells & Hydrogen.

- Alternative Fuels & Vehicles includes main stream and other vehicle fuels.
- Alternative Fuels includes Main Stream and other Bio Fuels, Batteries and Other Fuels.
- Building Technologies includes Doors, Windows, Monitoring & Control Systems and Insulation/ Heat Retention Materials.

Renewable Energy includes 7 sub sectors (Level 2), sub divided into 30 Level 3 activity groupings:

- Wind includes Large Turbines, Small Turbines and Wind Farm Systems.
- Wave & Tidal includes Ebb & Flood, Pumps & Equipment, Turbine & Generation etc.
- Photovoltaic includes Systems & Equipment, Cells and Chemicals.
- Hydro includes Turbines, Pumps, Electricity Supply and Dams.
- Geothermal includes Whole Systems, Specialist Equipment, Consulting and R&D.
- Biomass includes Energy, Furnace, Boilers and Related Systems.
- Renewable Energy consulting includes specialist consulting and legal advice.

The **Additional Energy Sources** sub sector groups together R&D, Design and Prototyping activities relating to a range of new Low Carbon energy sources.

These energy sources include: Fuel Cells, Hydraulic Accumulators, Hydrogen, Molten Salt, Thermal Mass, Compressed Air, Superconducting Magnets and more general energy storage research.

This is a small sub sector (in value and impact) because only energy sources that have a current economic footprint (i.e. trading) are included. This excludes a number of promising energy sources that are still in development and for which economic evidence is not yet available.

The **Air Pollution Control** sub sector includes a wide range of manufacturing, operations, consulting and engineering functions that relate to improving and maintaining air quality. This includes:

- Emission Control sensing and monitoring systems and technologies.
- Indoor Air Quality Control (domestic and industrial) through ventilation, cooling and purification systems.
- Dust & Particulate control through installed technologies like filters, towers, scrubbers, cyclones and eliminators.
- Process Engineering for odour control and other cleaner technologies.
- Industrial Emission Control technologies and equipment (manufacture, installation, operations and maintenance).
- Emission Control through manufacture, installation and operation of sampling, control and evaluation systems.

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 (main stream) and Other Fuels and Vehicles. This sub sector does not include bio diesel (see Alternative Fuels). It does include:

- Alternative Fuels includes the production, supply and distribution of Natural Gas (Compressed or Liquefied), Synthetic Fuel and Auto Gas (LPG, LP Gas or Propane).
- Other Fuels and Vehicles includes vehicle technologies and fuel sources that are still at an early stage.
- Research, Design, Development and Prototyping activities are included 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.

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 - chemicals, chargers, controllers, cables, connectors, containers, suppliers and testing equipment.
- Bio fuels for Vehicles - bio diesel, butanol, ethanol and vegetable oils.
- Mainstream Bio fuel applications (non transport) - bio diesel, butanol and ethanol.
- Other Bio fuels- biomass, methane, peanut oil, vegetable oil, wood and woodgas.
- Other fuels - Hydrogen.

The **Biomass Energy** sub sector includes all activities that convert biomass into energy but excludes biomass materials (see Alternative Fuels). It includes:

- Biomass furnace systems - manufacture, supply, consulting, design, installation, engineering and other services for domestic, industrial and community applications.
- Biomass energy systems - manufacture, supply, consulting, design, installation, engineering and other services for domestic, industrial and community applications.
- Manufacture of biomass boilers and systems including boilers, cogeneration, heat exchange and packaged power systems for domestic, industrial and community applications.
- Biomass boilers and related systems including supply, consulting, design, engineering, installation and other services for boilers, cogeneration, heat exchange and packaged power systems for domestic, industrial and community applications.
- Technical and operational consulting.

The **Building Technologies** sub sector includes main stream building materials and systems that contribute to reduced energy use and to lowering the carbon footprint of buildings. It includes:

- Windows - the manufacture, supply, distribution, installation and development of double glazed, electro chromatic, insulated alloy, honeycomb and triple glazed units.
- Doors - the manufacture, supply, distribution, installation and development of insulated alloy and plastic doors.

- Insulation and heat retention materials - the manufacture, supply, distribution, installation and development of insulation materials, heat retention surfaces & ceramics, electronic control systems and controlled venting and ducting systems.
- Monitoring and control systems - the manufacture, supply, distribution, installation and development of energy and distributed energy control, monitoring, management and analysis systems.

The **Carbon Capture & Storage** sub sector includes activities that store carbon emissions - from locations like power plants and prevent them entering the atmosphere. It includes manufacturing, supply, distribution, installation, maintenance, development and design of:

- Pre combustion capture systems
- Post combustion capture systems
- OxyFuel combustion systems
- Pipeline systems and services
- Ship storage and discharge systems
- Ocean storage equipment and services
- Mineral storage equipment and services
- Geological storage equipment and services
- Engineering, project management and consulting services.

The **Carbon Finance** sub sector includes investment activities and financial instruments for emission reduction projects and carbon trading. This includes:

- Carbon credits finance and fund management - land, project or general trading services from finance houses and investment funds.
- Carbon credits trading - development and supply of trading systems, land/ project/ general trading houses and transactions.
- Carbon market intelligence - carbon markets analysis & reporting and carbon trading by forecasting and reporting from journals, online, data providers or other publishing sources.
- Projects and verification - data collection, verification, legal, project development, capacity development and carbon declaration services.
- Press and journalism - financial press and periodicals, other journals, data providers and online services.

The **Contaminated Land Reclamation and Remediation** sub sector includes all activities that bring land back into agricultural, industrial, community or commercial use. This includes longer term activities like the decommissioning of nuclear sites.

Remediation and land reclamation includes land forming, bunds, geotextiles, storage & containment, oil interceptors, drainage systems, monitoring systems, proprietary treatment processes, sampling & analysis, site investigation, specialist cleaning services, cleaner technology R&D, surface & ground water services, organic waste composting and other services.

Decommissioning includes equipment, consulting, project management, safety critical assessment, pollution control, enviro risk analysis & impact assessment, recycling &

compaction, waste collection & containment, waste water treatment, site assessment, excavation, sampling & analysis and monitoring.

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

- R&D into high efficiency lighting, heating & ventilation, power, lighting, equipment & pumps and advance management systems.
- Gas Supply - monitoring, meterage, leak detection & maintenance, gas supply control and manufacture of high efficiency consumer equipment and devices.
- Lighting - manufacture, supply, distribution and installation of energy saving light bulbs & tubes, lighting and control systems.
- Heating & Ventilation- manufacture, supply, distribution and installation of energy saving equipment and systems.
- Electrical - manufacture, supply and installation of energy saving power control, building control, power consumption control & monitoring systems.
- Consulting and other services - advice & consultancy, publication, training and design of management systems.

The **Environmental Consulting and Services** sub sector includes consulting, training and management services that are specific to the environmental sector. This includes:

- Specialist consulting - habitat assessment, regulations, compliance and management systems, audits and impact assessment, eco design, eco- investment, climate change modelling, insurance and bio-diversity advice & assessment.
- Manpower and executive recruitment, temporary and permanent recruitment, contracted and interim management services.
- Management services - general consulting, financial, IT, software and marketing services.
- Training and education - publications, online publications, teaching aids, newsletters and courses for waste management, waste water treatment etc.

The **Environmental Monitoring, Instrumentation and Analysis** sub sector includes activities that measure water, soil and air quality and that support wider pollution control activities in other land, water, marine or air- based environmental sub sectors. It includes:

- Environmental monitoring - development of cleaner monitoring processes and technologies, vehicle testing, oil spill detection, food testing, nitrate levels, meteorological, water/soil/air quality testing and monitoring.
- Instrumentation equipment & control manufacture, supply, maintenance and development of instrumentation, laboratory equipment and software for environmental/ air/ water/ land/ marine analysis.
- Environmental analysis - laboratory testing, data logging & recording, quality reporting, collection & collation of samples, auto sampling systems, in-field measurement and reporting and R&D in water, soil and emissions analysis.

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

- Manufacture and supply of specialist thermally enhanced equipment- grout, heat pumps, pipes, flow control valves, drilling equipment, installation rigs and ancillary equipment.
- Whole systems manufacture and supply for industrial, residential and community geothermal energy applications.
- Component design and research- design services, component research and component recycling.
- Consulting & related services- architectural, construction, systems design, consulting, engineering, installation and project development services.

The **Hydroelectric Energy** sub sector includes activities that help to extract energy from river and other water sources held in dams (as opposed to wave or tidal energy) that is used to drive turbines and generators. Large scale civil engineering/construction activities associated with dam building have not been included in this analysis. Included are:

- Turbines - manufacture, supply, installation and maintenance of turbine generators, control systems, spares and structural supports and fittings.
- Dams & structures - manufacture, supply, installation and maintenance of dam operational systems, control systems, maintenance services and sluice gates and actuators.
- Pumping & lubrication - manufacture, supply, installation and maintenance of pumps, spares, storage and lubrication systems and spares.
- Electricity supply - manufacture, supply, installation and maintenance of power factor, power distribution and grid connections and supporting structures.

The **Marine Pollution Control** sub sector includes responses to pollution hazards at sea and also discharged from land- based sources. It includes the following products and services for deep sea, coastal waters and inland waterways:

- Marine pollution abatement - manufacture, supply and maintenance of booms, chemical discharge treatment equipment, solid & liquid waste/ radioactive containment and treatment equipment and monitoring services, spillage clean- up services, shoreline & shallow water remediation and maintenance services and collection & containment services.
- R&D - cleaner processes and technologies, monitoring systems, oil absorbents, boom and containment systems, water containment and treatment technologies.
- Specialist consulting and training - chemical discharge prevention, education, policy & planning, training, publications, sewerage discharge management, radioactive waste management and solid and liquid waste management.

The **Noise & Vibration Control** sub sector includes all activities that prevent or control noise and vibration pollution. It includes

- Noise abatement - manufacture, supply, installation and maintenance of barriers, acoustic management equipment, noise insulation, noise & vibration control and monitoring equipment, acoustic management equipment, noise insulation materials, monitoring services, large plant services and surface modifications.

- R&D - noise attenuation, noise sensing, vibration sensing, vibration control and noise & vibration abatement equipment and cleaner technologies and process by development.
- Consulting and training- consulting, publications, training and noise monitoring services.

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 - manufacture, installation and maintenance.
- Construction of plant and equipment - site development, reactor and buildings and power plant/ equipment construction.
- Commissioning engineering services - cooling & thermal control, engineering maintenance, instrumentation, power distribution, reactor & plant commissioning.
- Sampling & testing services - thermal control testing, remote monitoring, back-up plant monitoring and effluent discharge testing.
- Nuclear scientific services - research, laboratory testing and fuel management.

The **Photovoltaic Energy** sub sector includes all activities that help to convert solar radiation into useable energy. It includes:

- Chemicals- production and supply of solar chemicals and solar pond salt.
- Systems & equipment - manufacture, supply, installation and maintenance of active and batch systems, clerestory windows, light shelves and tubes, solar box cookers, solar combi systems and solar lighting design.
- R&D- solar power and solar car research.
- Photovoltaic cells- manufacture, supply, installation and maintenance of photovoltaic modules, mounting systems, ancillary components, cells and cell materials.
- Other equipment & chemicals- manufacture, supply, installation and maintenance of glass houses, convection towers, heliostats, parabolic collectors, turbines, trough collectors, towers and solar trackers.

The **Recovery & Recycling** sub sector includes all activities relating to the collection and processing of domestic and industrial waste products. This includes:

- Waste collection- manufacture, supply, installation and operation of equipment and services for collection of household, industrial and hazardous waste, treatment of waste prior to landfill and supply of pre-treated recyclates.
- Engineering & equipment - engineering services and process control for the complete range of recycling stock Consulting & training- collection and processing consultancy and training, publishing, legal & insurance advice.
- R&D - metals recovery, pyrolysis, bio-based systems, new recyclable materials, new collection & processing technologies.
- Recycling stock - recovery, recycling, processing, sorting, supply and packaging of rubber, plastics, paper, oil, electrical, electronics, glass, composting, construction & demolition, automotive, wood and textiles stocks.

The **Renewable Energy Consulting** sub sector includes consulting and legal services specific to Renewables i.e. not included in general or specific environmental consulting. It includes:

- Legal services - wind farm location and other renewable energies.
- Consulting- turbines, solar and photovoltaic applications, public sector and corporate Renewables policies, nuclear energy, insulation technologies and alternative fuel technologies.

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

- Construction & operation of waste treatment facilities for anaerobic digestion, composting, incineration, landfill, waste to energy conversion and the supporting engineering services.
- Equipment for Waste treatment, manufacture, supply, installation and maintenance of bio filters, bio reactors, collection equipment, grease traps, oil interceptors, materials processing equipment, monitoring & control equipment and nightsoil & landfill leachate treatment.
- R&D - incineration technologies, energy from waste systems, cleaner processing & treatment technologies, disposal of hazardous waste and other materials processing technologies.
- Consultancy and training - books, periodicals & publications, specialist consulting and training for asbestos, hazardous materials and other waste management systems.

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 for activated sludge, aerobic & anaerobic treatment, biological odour & corrosion control, demand management & leakage reduction, effluent treatment, filters, microbial treatment, screens, sequencing batch reactors, water disinfection and storm/ grey water treatment.
- Engineering - field engineering, pipe & valve maintenance, fitting & construction, fabrication & welding and engineering design.
- R&D - water purification, water management, black/ grey water treatment, biocides, bio reactors and aerobic/ anaerobic treatment technologies.
- Consulting and training - engineering and water management training, publishing and specialist consulting for water systems treatment, management and engineering.

The **Wave & Tidal Energy** sub sector includes all activities that help to convert the energy from waves and tides into usable power (also known as marine renewable energy). It includes:

- Turbines & generators - the manufacture, supply, installation and maintenance of tidal turbines, structural supports and fittings, spares and turbine control systems.
- Pumps & equipment - the manufacture, supply, installation and maintenance of pumps and pump spares.

- Two basin schemes - provision of structural engineering and field maintenance services.
- Ebb & flow systems - manufacture, supply, installation and maintenance of ebb and flood generation systems.
- Assessment & Measurement - waves, water levels, turbidity, tidal energy, sediment, salinity pollutants, fish stocks monitoring and local/ global environmental impact assessment.
- Other general services - financial planning, operational and maintenance services.

The **Wind Energy** sub sector includes all activities that convert wind power into usable energy. This includes 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:

- Wind farm systems - manufacture, supply, installation, operation and maintenance of integration, power plant, power control, grid entry equipment and systems and electrical and mechanical componentry.
- Small wind turbines - manufacture, supply, installation, operation and maintenance of small turbine systems (blades, towers, fixing structures, cowlings, enclosures, gear boxes and drive trains), componentry and research.
- Large Wind Turbines - manufacture, supply, installation, operation and maintenance of large turbine systems (blades, towers, fixing structures, cowlings, enclosures, gear boxes and drive trains), componentry and research.

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