# COMPETIVENESS THROUGH RESPONSIBLE SUPPLY CHAINS AND RESOURCE EFFICIENCY:

# A REGIONAL OUTLOOK

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## EXECUTIVE SUMMARY

This report describes an independent analysis by the University of Derby Business School (DBS) of surveys conducted by the East Midlands Chamber of Commerce (EMCC) in 2017 and 2015. Whilst the surveys were part of the EMCC's routine quarterly engagement with local businesses that dealt with a range of traditional business interests, this analysis focuses upon a series of questions that addressed companies' awareness and engagement with resource efficiency and the degree to which they supply and benefit from low carbon and environmental goods and services (LCEGS).

Respondents to the EMCC survey were evenly balanced across Derbyshire, Nottinghamshire, Leicestershire and the three major cities therein. Similarly, there was a good balance between SMEs and larger businesses represented in the survey sample.

The study shows that the number of businesses supplying low carbon and environmental goods and services (LCEGS) across the East Midlands is growing - with 24% of companies surveyed by EMCC in 2017 deriving some degree of turnover from LCEGS, compared with 16% in 2015. 12% of businesses surveyed generated more than 20% of their turnover from LCEGS in 2017, compared with only 8% of business in this category in 2015.

According to the survey data, micro and small sized businesses have shown the greatest growth in LCEGS sector activity between 2015-2017. Both these categories of businesses show a significant increase in the number of businesses generating a proportion of their turnover from LCEGS (8.8% and 9.1% respectively). On the other hand, slightly more medium-sized businesses in 2017 said they derived no turnover from LCEGS (81.4%) compared with 2015 (79.7%).

Whilst none of the large businesses in the sample generated their entire turnover from LCEGS in 2017, they increased the proportion of their LCEGS turnover in the 20-49% and 50-79% categories (by 9.6% and 6.1% respectively). Countering this trend, however, was a 2.6% decrease in large businesses deriving 80-100% of turnover from LCEGS.

The three top manufacturing sectors in the region by contribution to the LCEGS sector in both 2015 and 2017 samples are: construction, engineering & manufacturing and the energy and water supply sectors. The top three services sectors across the region, by their contribution to the LCEGS sector are: professional services, transport and logistics, and retail sectors. Compared with other key sectors in the region, the construction sector alongside energy and water services derive the largest proportion of turnover from LCEGS. However, engineering & manufacture, transport & logistics, retail and professional services companies are all showing significant growth in LCEGS business.

On average, in 2017 manufacturing sector companies generated more annual turnover from LCEGS than companies operating in the services sector. This is a 20% improvement on 2015 figures, which indicate that over the last two years more and more regional businesses in the manufacturing sectors successfully supply LCEGS. Businesses operating in the various services sector are significantly lagging behind this trend with little increase in the supply of low carbon environmental services over the last two years.

When considering their regional supply chains, the businesses surveyed indicated that business competitiveness was most strongly impacted by the following factors: employing local people, having a policy on ethical practices, using local suppliers and becoming more energy efficient. However, whilst businesses in the region also recognised the importance of having policies on Modern Slavery and introducing renewable technologies and processes; they were more ambivalent about environmental accreditation and proving that their products are from sustainable sources.

31%, of the regional businesses surveyed reported a small increase in resource efficiency initiatives in 2017, with eight percent reporting a significant increase in this area, when compared to 2016. 21% of companies stated 'no increase' in investment in resource efficiency during 2017 when compared to 2016, while 23% of the survey respondents confirmed that their companies do not invest in resource efficiency at all. Only two percent of the survey respondents reported a significant decrease in investment in resource efficiency.

Our sector analysis of the investment in resource efficiency shows that construction and retail businesses are the biggest investors in this arena. Although overall, fewer services businesses invest in resource efficiency than manufacturing businesses; with professional services leading this trend. Finally, it is reassuring to see that none of the business operating in the top three manufacturing and services sectors in our sample reported a significant decrease in the investment in resource efficiency in 2017 when compared to 2016.

The report confirms the data collected routinely by the EMCC through the Quarterly Economic Survey and the environmental sustainability research undertaken by the Derby Business School present unique insights into the regional green growth trends and growth opportunities. Such insights are valuable signposts for business strategies and investment priorities. They have a potential of informing the local policy initiatives that are designed to support business productivity and competitiveness, whilst accelerating the local economy towards a more sustainable future.

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# 1. Introduction

In January 2018 the Office for National Statistics released their latest figures for the UK low carbon and renewable energy (LCRE) economy, which grew by 5.0% to £42.6 billion in 2016, from £40.5 billion in 2015; accounting for around 1% of total UK non-financial turnover. The number of employees working directly in the LCRE economy in the UK, grew by 3.3% to 208,000 full-time equivalents (FTE) in 2016, from 201,500 in 2015; accounting for around 1% of total UK non-financial employees (Office for National Statistics, 2018).

It is worth noting that energy efficient products accounted for almost half of total LCRE turnover (£20.7 billion) and over two-thirds of LCRE employment (141,500 FTE) with exports related to the low emission vehicles sector worth £2.2 billion, representing 60% of all UK LCRE exports in 2016. However, this is only part of the 'clean growth' landscape in the UK.

The ONS also estimate that the environmental goods and services sector (EGSS) produced an additional output of around £61.1 billion in 2014, growing 18.7% between 2010 and 2014 (Office for National Statistics, 2017). In 2015, the Department for Department for Business Innovation and Skills estimated that the wider low carbon economy supply chain employed a total of 460,600 people, representing approximately 1.5% of all UK jobs (DBIS, 2015).

The same report estimated that low carbon business turnover was more than double that of the UK's auto manufacturing industry; and that the direct low carbon economy generated £26.2 billion in Gross Value-Added terms in 2013. This suggests that the wider Low Carbon Economy (LCE) is about five times larger than Aerospace; two and half times the size of Pharmaceuticals; almost twice as large as the Chemicals industry and equivalent to Food and Drink in GVA terms. These figures, however, mask an even wider trend for businesses in all sectors to provide environmentally friendly, low-carbon, green and socially aware products and services – as well as those that are seeking to improve the financial bottom line by reducing operational costs through energy and other resource efficiencies.

This report describes an independent analysis of surveys conducted by the East Midlands Chamber of Commerce in 2017 and 2015 in collaboration with Sustainable Business and Green Economy Research Cluster, Derby Business School, University of Derby. Whilst the surveys were part of the EMCC's routine quarterly engagement with local businesses, this analysis focuses upon a series of questions that addressed companies' awareness and engagement with resource efficiency and the degree to which they supply and benefit from low carbon and environmental goods and services (LCEGS).

Following this introduction, the report is arranged into six further sections

1. Introduction
2. The 'Clean Growth' Landscape and Business Competitiveness
3. Low Carbon Goods and Services Business: A regional outlook
4. Responsible Supply Chains and Business Competitiveness
5. Resource Efficiency
6. Competitiveness of Regional Business and Clean Growth
7. Conclusion and Recommendations

# 2. 'Clean Growth' Landscape and Business Competitiveness

## 2.1 Policy landscape

The UK Climate Change Act 2008 sets out clear emissions targets to be achieved by 2050 and a pathway to deliver these ambitions through regular Carbon Budgets. The Act requires HM Government to bring forward policies to deliver these outcomes and a monitoring framework overseen by the Committee on Climate Change, whose role is to evaluate progress and suggest changes to policy measures.

The Government's Clean Growth Strategy was published in October 2017 and sets out its current plan for meeting the legislated carbon budgets via 50 key policies and proposals that will be implemented across the economy in the coming years. In launching the strategy, Prime Minister Teresa May said that "Clean growth is at the centre of our modern Industrial Strategy" (BEIS, 2017) – and by implication, the LCEGS sector will be central to the nation's response to this strategy.

In January 2018 the Committee for Climate Change (2018) produced its preliminary analysis of this strategy and its assessment of whether the UK is on track to meet the forthcoming carbon budget commitments. The Committee concludes that although the Government has made a strong commitment to achieving the UK's climate targets, there are significant shortfalls in predicted greenhouse gas emission reductions for the fourth and fifth carbon budgets; with a gap of 155 MtCO2e for the fourth budget and one of 260 MtCO2e for the fifth carbon budget (Committee on Climate Change, 2018).

The table below summarises the current policy measures targeting clean growth.

**Table 1: The firm policy ambitions as per Clean Growth Strategy 2017-2022-**

| Firm policy | Ambition |
|---|---|
| Power auctions | £557m funding, which could support around 45 TWh low-carbon generation |
| Energy Company Obligation (ECO) extension | Funding extended to 2028 with a focus on fuel-poor homes |
| Industrial heat recovery programme | £18m to encourage recovery & reuse of heat from industrial processes |
| Industry reporting framework | To align with mandatory reporting under the Energy Savings Opportunity Scheme |
| Renewable Transport Fuels Obligation (RTFO) extension | Renewable transport fuel levels increased to 9.75% for 2020 & 12.4% in 2032 |

*Source: CCC (2018 p.53)*

These policy ambitions are aimed at large corporate organisations and the supply side of the low carbon economy, but the CCC also highlight a number of policy intentions that begin to address the demand side of this equation; with aspirations to improve business and home energy efficiency. The CCC also identifies the need for contingency and recommends a number further measures that should be designed to plug the policy gaps and go further to meet our national commitment to the Paris Agreement. The CCC implores HM Government to pursue these additional measures "with vigour, urgency, and sustained commitment to

ensure further delays do not make the carbon budgets unattainable" (CCC 2018 p.80). Whilst the ensuing policy innovations remain uncertain for now, the CCC report provides a strong steer to regional businesses on the potential direction of travel for policy incentives and deterrents in the coming years.

### 2.2 Financial landscape

Whilst the national policy landscape will be an important driver of economic activity in the coming years, Joel Makeover (2018) notes potentially even more significant shifts in corporate finance and investment, as mainstream investment firms sharpen their focus on the environmental, social and governance performance (ESG) of publicly traded companies across the globe. In the State of the Green Economy report for 2018, Makeover shows that investors, lenders and ratings groups are starting to redefine "fiduciary responsibility" to include a company's ESG data and vulnerability to climate risks. The European Union is also encouraging markets to think longer-term and pension funds to act in the best interest of sustainability, whilst at the same time improving disclosure to help investors understand which investments are sustainable and which are not. Makeover (ibid.) argues that the message to corporate boards is clear: "Take stock of your company's climate and resource risks, as well as its social impacts, both operationally and in [your] supply chain" or risk falling foul of subsequent investment decisions. As global Stock Markets begin to leverage an ever-growing cache of company-specific data and algorithms in order to make investment decisions — such as combining artificial intelligence and satellite imagery to pinpoint which company's facilities are most likely to suffer from droughts, extreme heat and sea-level rise, the changing climate will no longer be seen as external to profits and productivity. As such, Big Finance is beginning demand environmentally positive business decision making.

### 2.3 Opportunities and challenges for SMEs

In the UK, SMEs account for more than 90% of the low carbon sector (Carbon Trust; Shell plc, 2013), with 11,550 businesses directly engaged in the LCE across the UK in 2013. Nationally employment in the low carbon sector grew 12 per cent from 2010 to 2013, with a total of 460,600 people working in the LCE supply chains. This represents approximately 1.5% of all UK jobs (Department for Business Innovation and Skills, 2015). SMEs are, therefore, significant contributors to the LCE by virtue of their prevalence and importance to local communities, through the employees they engage, their business practices and their role in supply chains. It is also a thriving sector, with growth holding steady at 5% year on year since before the financial crash in 2008.

However, the UK Environment Agency observes that because SMEs are exempt from many of the mandatory legal requirements that drive larger businesses, they are often loathed to go beyond regulatory compliance to make substantial investment in efficiency measures, for fear that their bottom line and competitiveness will be affected. For other SMEs, though, cost saving through more efficient use of materials or energy efficiency are seen as compelling enablers (Klewitz, Zeyen, & Hansen, 2012; Triguero, Moreno-Mondejar, & Davia, 2013) and there is an increasing awareness that a competitive advantage can be gained from the enhanced reputation developed through demonstrating 'green credentials' to ethically

driven customers. In reality, as Bansal & Roth (2000) show, low carbon or environmental business practices are likely to be driven by a combination of influences that include regulations, business case, stakeholder pressure and the ethical preferences of the business owner; with the supply chain in which they operate becoming an increasingly significant driver for SMEs.

There is a growing body of research Baranova & Paterson (2017) that highlights the attributes of SMEs that are succeeding in the Low Carbon Economy. Unsurprisingly, capabilities include environmental management skills and routines, product/service design with a focus on sustainability, waste management, resource efficiency and other practices that focus on the reduction of the ecological footprint of the firm.

It seems trivial to point out that all businesses can benefit from the cost savings associated with improved energy and resource efficiency and their effect on the financial bottom line and associated impact on competitiveness. However, there is growing evidence of a direct relationship between a firm's stakeholder management, marketing and R&D competences and environmental strategy, and their competitiveness and a superior financial performance. The recent study (Bragdon, 2017), which followed the performance of 60 companies that set out to balance the interests of profitability with those of society and the environment, concluded that the companies, that mimic natural systems, out-perform Standard & Poor Global and the FTSE World equity indices by 60% over a 20 year period (Bragdon, 2017; Bragdon & Veatch-Bragdon, 2007).

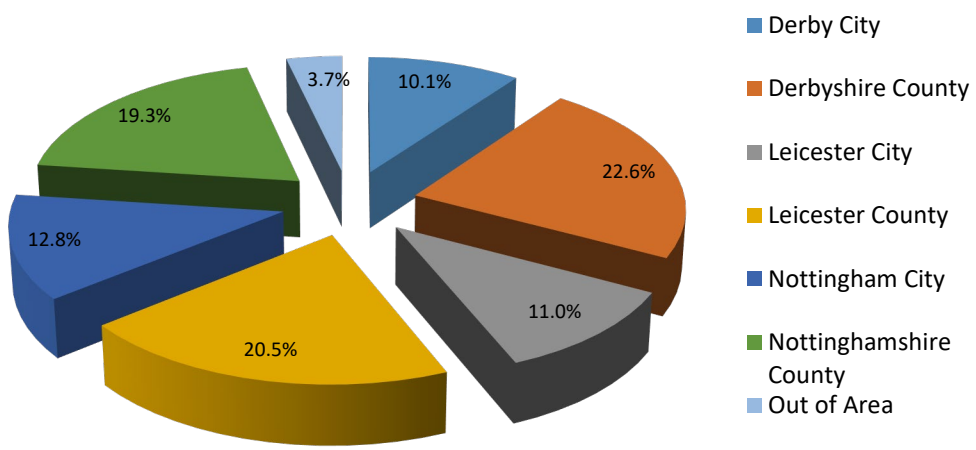
## 3. Low Carbon Goods and Services Business: A regional outlook

The D2N2 region has a good reputation for supporting low carbon business. D2N2 was ranked fourth most committed to climate change, adaptation, mitigation and the LCE overall; and third most committed to the LCE in a study of English Enterprise Partnerships (LEPs) by Sustainability West Midlands in 2016. The D2N2 LEP was commended for its attention to mapping opportunities to grow low carbon business across the region – most notably in key sectors, such as power generation, low carbon buildings construction, carbon capture and storage, environmental services and low carbon vehicles and fuels.

### 3.1 Survey responses by local authority

The East Midlands Chamber of Commerce (EMCC) recently launched a survey to assess the scale of the LCGS businesses in the region and their approach to resource efficiency initiatives, business activities towards supplying low carbon goods and services in the region and competitive strategies through responsible supply chains. This survey was carried out in the third quarter 2017. 327 businesses took part in the survey, mainly operating in the three counties in the East Midlands - Derbyshire, Nottinghamshire and Leicestershire. A full breakdown of the location of the businesses who took part in the survey is presented in Figure 1.

**Figure1: Company location by local authority, Q3 2017**



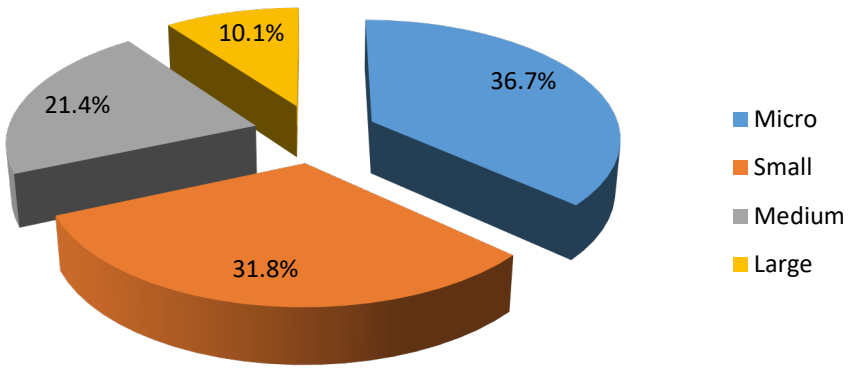

The survey responses are evenly distributed across all three counties with Derby City and Derbyshire County business accounting for 32.7% of the total survey respondents, Leicester City and Leicestershire County accounting for 31.5%, and Nottingham City and Nottinghamshire for 32.1% respectively. Only 3.7% of the survey respondents came from outside these three local authorities. Hence, the bulk of the survey response, 96.3%, came

from businesses operating in the three counties, with Derbyshire County leading the proportion of the survey responses at 22.6%. Businesses located in the three main regional cities, Derby, Leicester and Nottingham, accounted for around 34% of responses to the survey, with Nottingham City leading the city businesses response rate at 12.8%, followed by Leicester City at 11% and Derby City at 10.1%.

### 3.2 Survey responses by company size

In terms of a company size, all four types of businesses – micro, medium, small and large – are represented in the survey. The breakdown of the survey responses by company size is represented in Figure 2.

**Figure 2: Survey responses by company size, Q3 2017**




The largest proportion of responses came from micro business at 36.7% of the total survey responses, which employ less than 10 people according the company size classification[1]. This is rather surprising as the smallest businesses are generally rather reluctant to participate in sector and regulator initiated surveys. Small businesses, employing between 11 and 49 employees, are well represented at 31.8% of the survey respondents, with 21.4% of the survey responses provided by medium-sized businesses (50-249 employees) and 10.1% of the survey responses provided by large companies employing over 250 employees. The structure of the survey responses indicates that the main response audience to this survey is SMEs, accounting for almost 90% of all the survey responses.

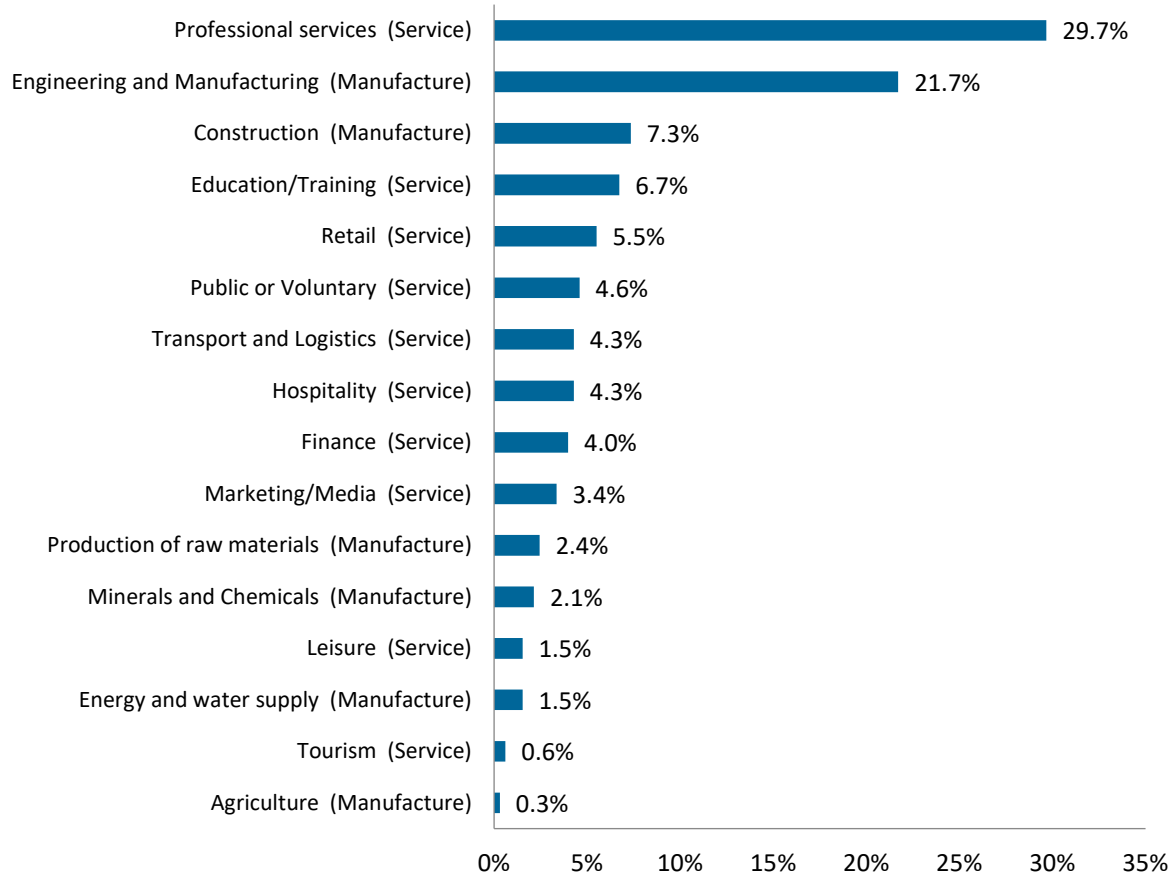
### 3.3 Survey responses by sector

According to Department for Business Innovation and Skills, LCEGS is used as an umbrella term, specifically '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' (DBIS, 2013). Analysis of

[1] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Enterprise_size

the survey responses by sector shows that one third of survey responses came from regional businesses operating in the professional services sector, followed closely by engineering and manufacturing sector representation at 22% of all the survey responses. These two sectors are clear leaders in terms of the sector representation in the survey results, which is presented in Figure 3.

**Figure3: Company by main sector of business activity, Q3 survey 2017**




### 3.4 Manufacturing sector vs services sector businesses

A closer look at the balance of survey participation across service and manufacturing businesses reveals that 65% of responses came from companies whose main business activity lies in services. Only 35% of the respondents were manufacturing firms. There is also a greater diversity of the services sectors representation than of manufacturing sectors. Tables A1 and A2, presented in Appendix A, illustrate the breakdown of survey responses received from manufacturing and services sectors by local authority.

Engineering and manufacturing firms have the highest representation of 61 % in the survey responses from manufacturing sector, followed by construction firms responsible for 21% of the survey responses respectively. The biggest proportion of the manufacturing firms in the survey responses came from Derby City and Derbyshire County.

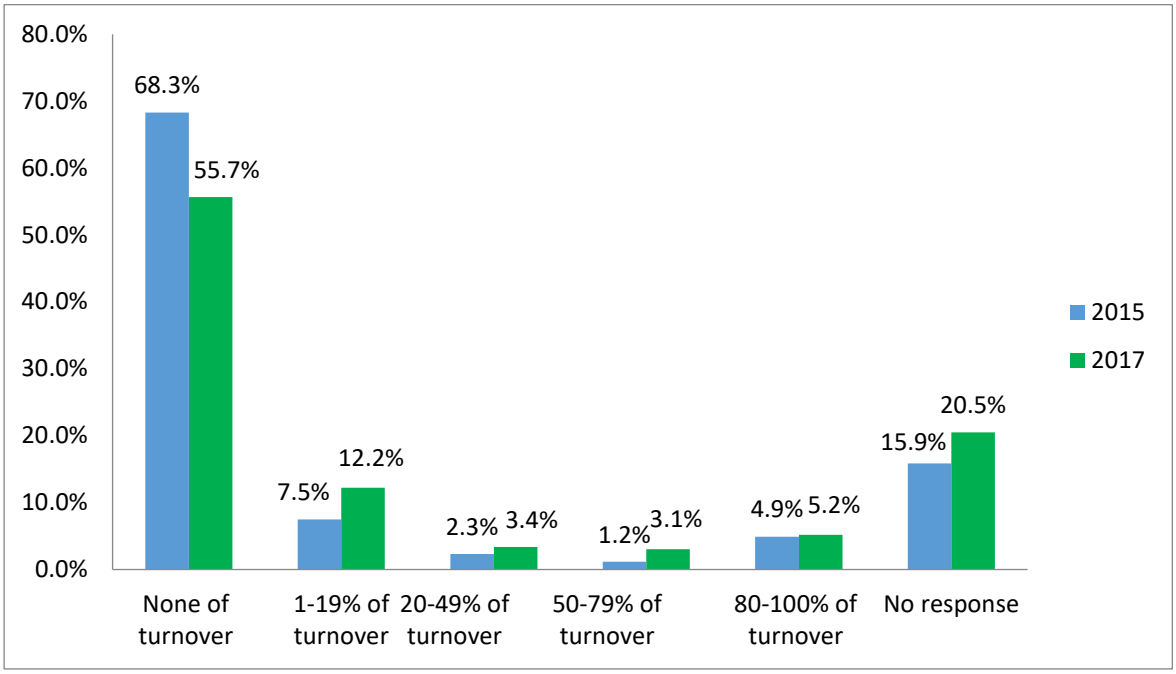
Services sector firms are well represented in the survey with professional services responsible for 46% of the resources in the service category. This is by far is the largest

representation in the services sector category only followed by education and training category at 10%, retail at 9% respectively and public/voluntary, hospitality, transport and logistics at 7% each, financial services at 6% and with the rest of service sectors categories at or below 5% (see table A2 for more details). By locality, all three counties are fairly evenly represented in the survey results, each accounting for 31% (Derby and Derbyshire), 32% (Leicester and Leicestershire) and 33% (Nottingham and Nottinghamshire) of the survey results respectively.

### 3.5 Turnover generated from low carbon good and services

A similar survey was carried out in the second quarter on 2015 with a response rate of 346, which is 19 responses more that in 2017 survey. This gap is negligible and therefore these surveys are considered to be comparable in terms of the number of received responses received. Both surveys asked a question about the proportion of the company turnover generated from low carbon good and services. A comparative analysis of the survey responses is presented in Figure 4. This shows that the percentage of businesses deriving some turnover from LCEGS business has increased from 16% to 24%, with 12% of businesses deriving more than 20% of their turnover from LCGS sector in 2017, compared with 8% in 2015. Given that this is a routine survey by the EMCC targeting the whole range of businesses in the region, this trend reflects a positive shift towards low carbon goods and services over just two years.

**Figure 4: Turnover generated by supplying low carbon good and services**




The data comparing the proportion of the turnover generated from LCGS depending on a company size is presented in Table 2. A closer analysis of this data suggests that:

- Macro Businesses: more businesses in this category generated their turnover from LCEGC in 2017 than in 2015. This increase is still in a rather small proportion of the

overall company turnover, 1-19% of the turnover, yet survey responses indicated 6.6% increase in this category. It is pleasing to see a reduction of 8.8% in the 'none of the turnover category' for the micro-businesses.

- Small Businesses: this category shows the biggest change in the 'none of the turnover category' – improvement of 9.1%. This is also complemented by the increase in the 1-19% turnover category generated from LCEGS of 5.7% when compared with position in 2015.
- Medium-sized Businesses: no significant change between 2015 and 2017 survey data in this category of businesses. There is a 1.7% increase in businesses stating that they have no proportion of LCEGS in their turnover. There is a slight decline of 0.1% in the 20-49% turnover and 0.3% decline in 80-100% turnover generated from LCEGS categories.
- Large Businesses: whilst none of the respondents from large businesses generated their entire turnover from LCEGS in 2017, they were increasing the proportion of their LCEGS turnover in the 20-49% and 50-79% range at 9.6% and 6.1% respectively. Worryingly, there is a 2.6% decrease in the category of 80-100% of turnover dedicated by large businesses to LCEGC.

**Table 2: Turnover generated by low carbon goods and services as a proportion of the overall turnover , 2015-2017**

| % of the turnover generated | Micro business | | Change, % | Small business | | Change, % | Medium-sized business | | Change, % | Large business | | Change, % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| by the LCGS | 2015 | 2017 | +/- | 2015 | 2017 | +/- | 2015 | 2017 | +/- | 2015 | 2017 | +/- |
| None of turnover | 85.5% | 76.7% | -8.8% | 84.1% | 75.0% | -9.1% | 79.7% | 81.4% | 1.7% | 87.2% | 87.2% | 0.0% |
| 1-19% of turnover | 1.7% | 8.3% | 6.6% | 8.7% | 14.4% | 5.7% | 15.6% | 15.7% | 0.1% | 7.7% | 12.1% | 4.4% |
| 20-49% of turnover | 3.4% | 3.3% | -0.1% | 1.6% | 1.9% | 0.3% | 1.6% | 1.4% | -0.1% | 2.6% | 12.1% | 9.6% |
| 50-79% of turnover | 1.7% | 4.2% | 2.5% | 1.6% | 2.9% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 6.1% | 6.1% |
| 80-100% of turnover | 7.7% | 7.5% | -0.2% | 4.0% | 5.8% | 1.8% | 3.1% | 2.9% | -0.3% | 2.6% | 0.0% | -2.6% |

When analysing company LCESG turnover data by sector, the three top manufacturing sectors where companies is contributing significantly to LCEGS sector are: construction sector, engineering and manufacturing sector and energy and water supply sector. The top three services sectors by their contribution to the LCEGS sector are: professional services, retail and transport and logistics sectors. The breakdown of the top three 'LCEGS sector contributors' by manufacturing/services is presented in Table 3.

**Table3: Top three manufacturing and services sectors by LCEGS contribution in company turnover, Q3 2017**

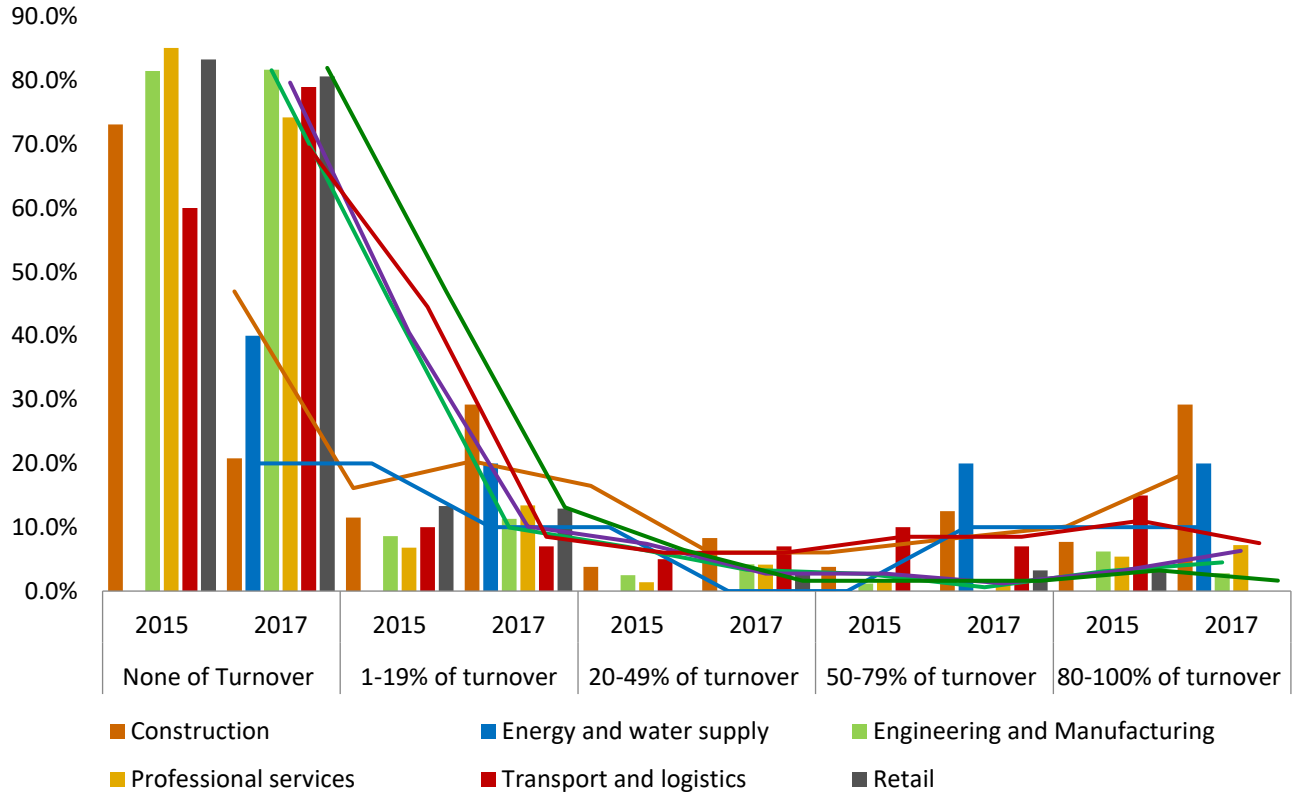
| | None of turnover | 1-19% of turnover | 20-49% of turnover | 50-79% of turnover | 80-100% of turnover |
|---|---|---|---|---|---|
| Construction | 20.8% | 29.2% | 8.3% | 12.5% | 29.2% |
| Energy and water supply | 40.0% | 20.0% | 0.0% | 20.0% | 20.0% |
| Engineering and Manufacturing | 81.7% | 11.3% | 4.2% | 0.0% | 2.8% |
| Professional services | 74.2% | 13.4% | 4.1% | 1.0% | 7.2% |
| Transport and logistics | 79.0% | 7.0% | 7.0% | 7.0% | 0.0% |
| Retail | 80.6% | 12.9% | 3.2% | 3.2% | 0.0% |

Table 3 emphasises the significance of LCEGS for the construction sector, with 79% of businesses deriving some form of turnover from low carbon environmental goods or services and with 29.3% of construction businesses deriving 80-100% of their turnover from LCEGS. Energy and water supply business also show a strong contribution to LCEGS sector, with 60% of businesses supplying this sector.

Amongst the services sectors this trend is much weaker, over 70% of businesses operating in the services sectors represented in the survey do not have any proportion of their turnover derived from low carbon environmental goods and services. The strongest contributor to this sector is professional services, which include for example business providing environmental accreditation services, carbon accounting, carbon footprinting and various type of consultancy services. They show the strong performance out of all services sectors represented with 13.4% companies generating 1-19% of the turnover and 7.2% companies generating 80/100% of the turnover. Transport and logistics services still have a poor engagement with LCGS sector as well as retail with around 80% of the companies surveyed declaring no turnover generation from LCGS.

When compared with the 2015 survey data (Figure 5), construction and engineering and manufacturing were these top two sectors by the proportion of the LCGS in company turnover. 11.5% of the construction companies surveyed in 2015 reported a 1-19% of turnover being generated by LCGS, when compared to 29% reporting in the same category in 2017 survey. In 2015, only 8.6% of engineering and manufacturing companies reported 1-19% of turnover being generated by LCGS when compared to 11.3% in 2017.

**Figure 5: Top three manufacturing and services sector by company turnover contribution 2015 and 2017 comparison**




Regarding the services sector performance in this category, transport and logistics, professional services and transport and logistics were the top three services sectors by contribution of LCGS in companies' turnover. 60% of companies operating in the transport and logistics sector reported no contribution of LCGS in their turnover in 2015, in 2017 this figure rose to 79%. In professional services, this category was reported at 85% in 2015, whilst in 2017 figures there is a decline in this category by 6% to 74%.

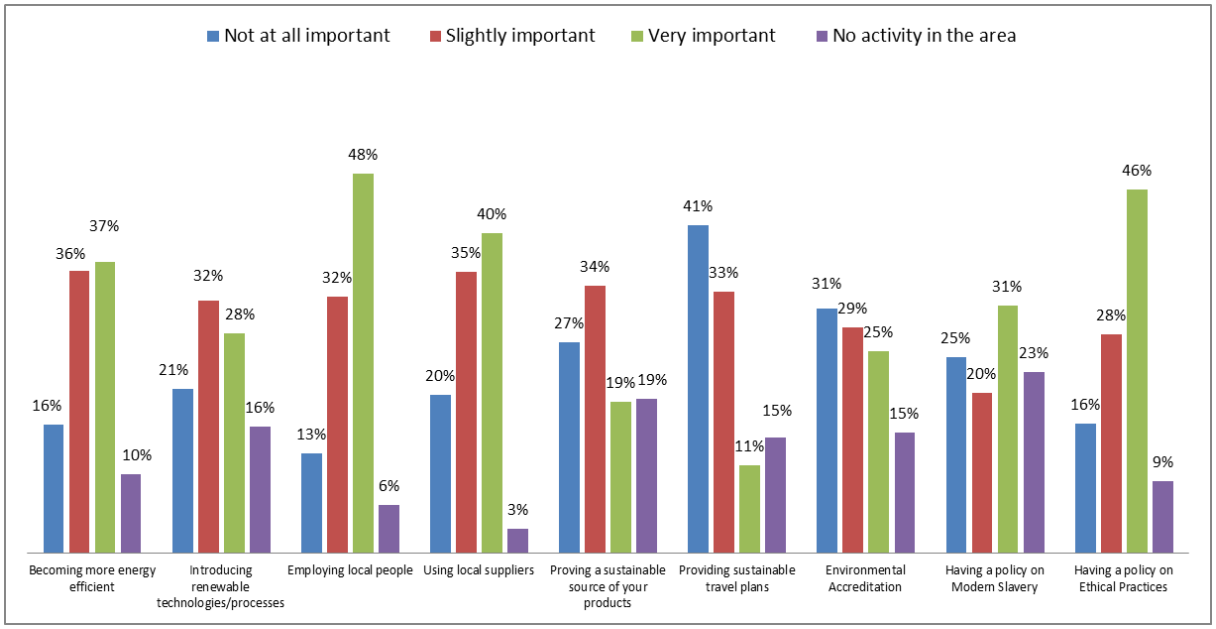
The retail sector companies showed marginal improvement on 2015 figures, with 3% improvement in none of turnover category and 3.2% improvement in each of the 20-49% and 50-79% turnover category. In terms of the 80-100% category – there is a decline of 3.3% recorded in 2017 figures when compared to 2015 survey responses.

On average, in 2017 the manufacturing sector companies generated more of its annual turnover from LCEGS sector, than companies operating in the services sector. This is 20% improvement on 2015 figures, indicating that over the last two years more and more regional businesses in the manufacturing sectors successfully supply LCEGC. Businesses operating in services sector are significantly lagging behind this trend with little progress being made over the last two years in becoming more proactive in supply low carbon environmental services.

## 4. Responsible Supply Chains and Business Competitiveness

The survey respondents stated the following preference in relation to a number of characteristics of responsible supply chains which are perceived to be linked to business competitiveness. Figure 6 illustrated an analysis by the response category.

**Figure6: Characteristics of responsible supply chains impacting business competitiveness**




The data indicates that employing local people, having a policy on ethical practices, using local suppliers and becoming more energy efficient were all deemed to be important characteristics of responsible supply chains. However, whilst businesses in the region also recognise the importance of having policies on Modern Slavery and introducing renewable technologies and processes; businesses were more ambivalent about environmental accreditation and proving products are from sustainable sources. Sustainable travel plans for employees were considered much less important in the current business environment.

This suggests that regional businesses may be missing out on potentially lucrative 'green markets'. A recent survey by Carbon Trust shows that two thirds (66%) of young adults want their favourite brands to reduce their carbon footprint with 55% saying they would be more loyal to a brand if they could see it was reducing its carbon footprint (Carbon Trust, 2012). Interestingly, these figures were significantly higher for other countries across the globe (except for the USA). In a separate survey of consumers in the UK the Carbon Trust found that almost two thirds (63%) of consumers are more likely to buy a product if they know action is being taken to reduce its carbon footprint.

## 5. Resource Efficiency

A question on investment on resource efficiency to reduce carbon footprint was posed as part of the 2017 survey set of questions. The analysis of the survey responses by company size is presented in Table 4.

**Table 4: Investment in resource efficiency by company size, Q3 2017**

| Investment in resource efficiency | Micro, % | Small, % | Medium, % | Large, % |
|---|---|---|---|---|
| No Increase | 21.7% | 23.1% | 14.3% | 24.2% |
| Significant decrease | 0.8% | 1.0% | 0.0% | 0.0% |
| Significant increase | 5.8% | 5.8% | 10.0% | 15.2% |
| Small decrease | 0.0% | 1.9% | 2.9% | 0.0% |
| Small increase | 20.8% | 32.7% | 45.7% | 27.3% |
| We do not invest in this area | 41.7% | 18.3% | 7.1% | 3.0% |
| No answer | 8.3% | 17.3% | 20.0% | 30.3% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% |

- Micro businesses: 41.7% of the regional macro businesses surveyed do not invest in resource efficiency. Of those who do, 21.7% reported 'no increase' in investment in the area of resource efficiency and 20.8% reported a 'small increase' in investment in this area in 2017.
- Small businesses: The largest proportion of the small business respondents, 32.7%, reported a small increase in resource efficiency. At the same time, 23.1% of the small business reported 'no increase in investment'. 18.3% of small business respondents to the survey stated that they do not invest at all in this area. Similar to micro businesses, 5.8% of small businesses reported a significant increase in this area.
- Medium-sized businesses: 45.7% of the medium-sized businesses surveyed reported a small increase in investment in resource efficiency. This in the highest performance in this category of responses received across all four company sizes represented in the survey data. 14.3% of the businesses in this category reported 'no increase' in investment in resource efficiency initiatives in 2017.
- Large businesses: 15.2% of the large business surveyed reported a 'significant increase' in investment in resource efficiency. This is the best performance in this category across the survey data. It is also encouraging to see that 27.3% of large companies report a 'small increase' in this area however, this should be balanced against het fact that 24.2% of respondents in this category reported 'no increase' in investments in resource efficiency. Whilst only 3% of large business respondents

sated that they do not invest at all in this area, 30 % of the large business who took part in the survey provided no answer at all to this question.

Overall, it is pleasing to note that the majority, at 31%, of the regional business surveyed has reported a small increase in resource efficiency initiatives in 2017 when compared to 2016. At the same time, 23% of the survey respondents confirmed that their companies do not invest in resource efficiency at all. 21 per cent of the companies stated 'no increase' in investment in resource efficiency during 2017 when compared to 2016. And only two percent of the survey respondents reported significant decrease in resource efficiency and eight per cent has reported a significant increase in this area during 2017.

This data analysis confirms a clear trend in the region: The larger the company, the greater the likelihood they will invest in resources efficiency, although medium-sized companies appear to be increasing their investment to a greater extent than the largest companies in this survey, with 56% showing some increase in investment of the last year. Micro business, these are businesses employing less than 10 employees, do not invest at large in resource efficiency. This trend could be explained either by the fact that they often rent business premises they operate from, or that often the scale of the business is not large enough for any investment in resource efficiency to have a positive impact on the 'bottom line'.

When analysing the data on investment in resource efficiency by top three manufacturing and services sectors in the sample, the following picture emerges (Table 5).

**Table 5: Investment in resource efficiency by sector, Q3 2017**

| Sector | Significant decrease | Small decrease | No investment | No increase | Small increase | Significant increase | No answer |
|---|---|---|---|---|---|---|---|
| **Construction** | 0% | 0% | 8% | 25% | 33% | 25% | 17% |
| **Energy and water supply** | 0% | 0% | 20% | 20% | 20% | 0% | 40% |
| **Engineering & Manufacturing** | 0% | 1% | 18% | 24% | 30% | 8% | 18% |
| **Retail** | 0% | 0% | 22% | 11% | 28% | 22% | 17% |
| **Professional services** | 0% | 3% | 31% | 26% | 25% | 3% | 12% |
| **Transport and logistics** | 0% | 0% | 21% | 21% | 43% | 7% | 7 % |

The largest proportion of responses indicated significant investments in the resource efficiency came from construction business at 25% only followed by retail business at 22.2% of survey response in this category. Across all top three sectors in the manufacturing and services, the largest proportion of business state small increase in investment and followed by 'no increase' in investment in 2017 when compared with 2016. There is more services sector business that does not invest in resource efficiency when compared with businesses operating in manufacturing with professional services business leading this trend. It is

encouraging to see that none of the business operating in the top three manufacturing and services sector business reported a significant decrease in the investment in resource efficiency in 2017 when compared to 2016.

# 6. Competitiveness of Regional Business and Clean growth

The study shows that the number of business that supply low carbon and environmental goods and services (LCEGS) are growing in the East Midlands - with 24% of companies surveyed by EMCC in 2017 deriving some degree of turnover from LCEGS, compared with 16% in 2015. 12% of businesses surveyed generated more than 20% of their turnover from LCGS sector in 2017, compared with only 8% of business in this category in 2015 survey. This is comparable to the picture nationally, where the LCEGS sector has been growing at around 5% year on year since 2007 (ONS 2018, CBI, 2012). Our findings confirm that an increasing number of micro and small businesses are entering the sector and that larger business are consolidating and increasing the proportion of turnover from the supply of LCEGS.

When it comes to strengthening competitiveness of the regional businesses, there are a number of important imperatives to be considered. These are discussed in the sections that follow.

### 6.1 Resource efficiency leading to improved cost efficiencies in a business

As our analysis indicates, local businesses continue to make mainly small investments in resource efficiency initiatives. These capital investments result in cost savings in various areas of the business; from saving energy and water consumption, reduction in production, warehousing and transportation costs to designing and delivering to the LCEGS market. Inevitably cost savings are beneficial not only in terms of contributing to carbon reduction; they also offer flexibility to pricing strategies, which can be used as part of competitive strategy of a business (Bowman and Faulkner, 1997; Porter, 1985).

For regional companies to continue to invest in resource efficiency they need access to technical expertise as well as funding and finance to support these initiatives. A number of ERDF projects operating at present in the D2N2 LEP region, for instance ERDF Low Carbon Business Networks (University of Derby and Derby City and Derby County Councils) and Energy for Business (University of Nottingham), provide capital grants to support regional SMEs to improve their energy efficiency as well as supporting technical innovation and a wider business development (Low Carbon Business Network, 2018; Energy for Business, 2018).

### 6.2 Access to green funding and finance

The access to finance and funding is seen by SMEs in our sample as a major area where they need to build capability. This is not surprising, as the lack of finance and the ability to attract funds from external sources is seen as one of the major limiting factors preventing SMEs to engage in sustainability initiatives (Lewis & Cassell, 2010; Perry & Towers, 2009; Torugsa et al., 2012). The ability to attract external funds is high on the agenda of the regional SMEs, which indicates that SMEs often struggle to develop a business case for sustainability (Moor & Manring, 2009). Thus, developing a strategic view of sustainability initiatives, which considers not only cost cutting, as a main short-term gain of the green investment, but longer-term benefits contributing to business growth and support towards the shift to a low

carbon economy, are important factors in businesses' pursuit of funding and finance to support sustainability and energy efficiency efforts.

### 6.3 Responsible supply chains in the region

A large number of regional SMEs are part of vast supply chains and networks at a regional, national and supranational level. Development of their sustainable sourcing approaches and effective carbon management across supply chains is vital. Recent studies confirm (Gimenez & Sierra, 2013; Lee & Klassen, 2008; Foerstl et al., 2010) that being a part of a supply chain that encourages sustainable sourcing and conduct has a positive impact on the sustainability orientation of the supply chain participants. Lee and Klassen (2008) found, in a case study of SMEs, that a combination of evaluation and collaboration provides synergies that help suppliers build their organisational capabilities that enable them to improve their environmental performance and that of their customers (i.e., the buying firms). In a similar vein, Reuter et al. (2010) confirmed that a combination of assessment and collaboration strategies generates the greatest effect for the greening of supply chains.

### 6.4 Eco-innovation

Green innovation is seen as a critical factor in supporting the transition to a low carbon economy (Department for Business, Innovation and Skills 2015; LCICG 2014; The Scottish Government 2010). Support for 'green' innovation is heavily featured on the agenda of key regional players, including our local LEP and Chamber of Commerce, as well as at the national level through the Low Carbon Innovation Co-ordination Group (LCICG, 2014) and the network of Energy Research Partnerships (ERPs).

SMEs have a significant potential to develop innovative solutions for green products and services as well as sustainable business products. Innovation in these areas could provide a source for differentiation alongside the cost savings, which could be achieved through adaptation of the low carbon strategies. Capability building for low carbon innovation is an emergent area of business activity, where both public and private sectors are supporting investment in low carbon technologies. For SMEs to succeed in this arena, they need to be supported in terms of finance and leadership for eco-innovation, which requires a long-term perspective, tolerance of failure and risk-taking. A combination of differentiation and cost effectiveness could contribute towards sustainable competitive advantage (Lynch, 2011), thus positively affecting the business continuity.

### 6.5 Environmental capabilities of regional businesses

Developing strategic capabilities to strengthen business competitiveness is highly relevant to support the 'clean' growth agenda (HM Government, 2017). A firm's environmental capabilities are capabilities that allow a firm to reduce its ecological footprint (Baranova & Meadows, 2017). These capabilities include, for instance, environmental management skills and routines, product/service design with a focus on sustainability, waste management, resource efficiency skills and practices and others that focus on the reduction of the ecological footprint of the business.

The results of this study indicate that r businesses across our region do not consider a link between competitiveness and having an environmental accreditation to be of significance. This is surprising, as this is often an important criteria in public tendering and commercial projects. Other types of environmental capabilities, which have much stronger association with business competitiveness, include accessing funding and finance, materials and energy efficiency, waste management, designing new LCEGS and introducing renewable technologies and processes (Baranova and Paterson, 2017).

Our analysis suggests that regional businesses need to apply a more strategic approach to capability building towards sustainability. This approach means that actively engaging in sustainability practices and caring for the natural environment sits at the heart of the firm's business strategy. This is then signalled to the market and other stakeholders by having the appropriate environmental management accreditations and brand associated with sustainability. They will readily engage with various networks. They will demonstrate the confidence in developing relationships with various stakeholders, including much larger organisations. And where they exist as part of a supply chain, they will generally consider themselves as proactive partners. Thus, environmental practices often reach beyond the organisational boundaries and involve capability building with external partners (Gulati, Norhia and Zaheer, 2000). To achieve success in developing these capabilities, a long-term perspective is exercised alongside the continuous efforts to reduce their carbon footprint.

### 6.6 Stimulating demand for LCEGS

It is important to stimulate the demand for LCEGS to support the increase of the proportion of LCEGS in the turnover of the regional business. This study confirms a steady increase of LCEGS share in the turnover of regional business with a stronger tendency towards this trend from manufacturing rather than services companies. Such a demand can be stimulated at a sector level by sector regulators supporting the market for LCEGS as in case of automotive and construction, with similar approaches benefiting the development of LCEGS in other markets.

The role of public sector organisations, including local councils, NHS and other public services, is significant in stimulating this demand. A stronger adherence to green procurement policy and tendering practices supporting sustainability; support of the regional infrastructure projects, including smart cities initiatives and raising public awareness of the benefits of sustainable lifestyle choices could all stimulate public and business-to-business demand for LCEGS. This could positively impact business environment and as such create more opportunities for businesses to respond by adopting competitive strategies in pursuit of these opportunities.

### 6.7 Regional capacity for leadership for sustainability

Support and active engagement of staff in sustainability initiatives are critical to ensuring the success of any company's green strategy. Sustainability needs to be positioned at the heart of the organisational strategy and viewed as critical to behavioural change at individual and organisational level. For SMEs, it is often challenging to encourage employees to 'do one

more task on the list' in addition to their contractual roles and responsibilities. As SMEs struggle for resources, their staff work to full capacity with little time for 'other' tasks and duties; so encouraging people to become environmental champions (Taylor et al, 2012) in initiating and supporting green practices, for example, is often viewed as a real challenge.

The study by Baranova and Paterson (2017) confirms the criticality of the senior management's commitment and 'hands-on' approach to working with employees across organisations and beyond to provide support and stewardship for sustainability. In the context of SMEs, where leadership agendas are often focused around familiar business priorities, with sustainability leadership often seen as secondary; although these are increasingly becoming interchangeable terms which are strongly associated with the success of sustainable business strategies. Regional support for SMEs to strengthen their role in transition towards sustainability in the region and to build their leadership capacity in this domain is of growing importance. But a much more integrated and collaborative approach is required that recognises the bespoke requirements of smaller businesses. It is proposed that local government, corporate businesses, a range of national and regional NGOs as well as higher education institutions (HEIs) should play a much more pro-active role in forming SMEs' support networks, partnerships and supply chain collaborations to accelerate the shift to a more sustainable local economy.

## 7. Conclusion and Recommendations

Our analysis of the EMCC QES data confirms a growing significance of the green growth in the region. This overall positive trend, with variations across the sectors, indicates that regional appetite for growth in pro-environmental market niches is buoyant and the regional SMEs are actively involved in working in various LCEGS markets. In order to support growth in this arena further, the following recommendations are drawn requiring an active engagement from business, policy community and other environmental stakeholders in the region:

1. Further strengthening of the regional support for SMEs with a specific focus on enterprise growth and developed linked to the positive environmental outcomes. D2N2 LEP and the Growth Hub are the key players in this arena with a strategic SME support remit. Their enterprise growth and 'scale-up' programmes should have a distinctive provision encouraging SMEs' contribution towards addressing the clean growth challenge as per UK Industrial Strategy (BEIS, 2017).
2. Multi-stakeholder engagement in the enterprise support in the region. The work of the ERDF Low Carbon Business Network project confirms the significance of the multi-stakeholder networks in encouraging businesses to engage with the clean growth policy agenda and pro-environmental initiatives. As part of these networks, businesses become 'critical friends' in discussions about the priority areas of the economic growth and an important voice of the business community in relation to the clean growth and energy strategies. Engagement of the local government, regulatory and professional communities in the work of these networks plays an important role in supporting sustainability transitions.
3. To support the acceleration of the green growth further, there is a need for skills development to address environmental skills shortages. Technical skills as well as broader sustainability skills development will need to become an integral part of the vocational, further and higher education to satisfy demands for eco-innovation and high performance organisations.
4. There is a need to recognise sectoral specifics when it comes to enterprise growth. Some of the sectors are heavily regulated in terms of firm's environmental performance, for ex. construction, and some are lagging behind, for ex, retail. The enterprise support needs to be more attuned to these specifics. For example, the establishment of the enterprise support programmes towards environmental sustainability in hospitality and tourism with links to the Green Tourism Award.
5. Establishment of the East Midlands Green Growth Observatory. The observatory is a partnership supported by the local government, local businesses, East Midlands Chamber of Commerce and the regional universities. The prime aim is to establish a central repository of data on green growth trends in the region as well as a register for green growth and low carbon champions. An access to this resource would allow for a greater degree of transparency in understanding regional low carbon economy trends, as well as becoming a significant source of data to aid decision-making for general public, business, policy-making and regulatory communities.

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## APPENDIX A

**Table A1: Survey responses by manufacturing sector**

| Sector | DC/DCC | LC/LCC | NC/NCC | OUT | Total | % |
|---|---|---|---|---|---|---|
| Engineering and Manufacturing (Manufacture) | 27 | 25 | 19 | | 71 | 61 |
| Construction (Manufacture) | 6 | 5 | | 13 | 24 | 21 |
| Minerals and Chemicals (Manufacture) | 4 | 1 | 1 | 1 | 7 | 6 |
| Production of raw materials (Manufacture) | 2 | 3 | 3 | | 8 | 7 |
| Energy and water supply (Manufacture) | 2 | 1 | 1 | 1 | 5 | 4 |
| Agriculture (Manufacture) | | | | 1 | 1 | 1 |
| **Total** | **41** | **35** | **24** | **16** | **116** | **100** |
| **%** | **35** | **30** | **21** | **14** | **100** | |

**Table A2: Survey responses by service sector**

| | DCDCC | LCLCC | NCNCC | OUT | TOTAL | % |
|---|---|---|---|---|---|---|
| Professional services (Service) | 30 | 24 | 38 | 5 | 97 | 46 |
| Education/Training (Service) | 9 | 7 | 4 | 2 | 22 | 10 |
| Retail (Service) | 4 | 7 | 6 | 1 | 18 | 9 |
| Public or Voluntary (Service) | 6 | 5 | 3 | 1 | 15 | 7 |
| Hospitality (Service) | 2 | 7 | 5 | | 14 | 7 |
| Transport and Logistics (Service) | 6 | 6 | 2 | | 14 | 7 |
| Finance (Service) | 5 | 5 | 3 | | 13 | 6 |
| Marketing/Media (Service) | 3 | 4 | 5 | | 11 | 5 |
| Leisure (Service) | 1 | 1 | 3 | | 5 | 2 |
| Tourism (Service) | | 2 | | | 2 | 1 |
| **Total** | **66** | **68** | **69** | **9** | **211** | **100** |
| **%** | **31** | **32** | **33** | **4** | **100** | |