

Opportunities in the Low Carbon Economy

Wolverhampton

May 2010

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Document & Project Structure

In 2009 Advantage West Midlands commissioned Atkins to undertake a regional review of the development of a Low Carbon Economy. Following this piece of work the West Midlands' City Region Local Authorities commissioned Atkins to undertake a more detailed look at individual council areas. This report presents the "Wolverhampton Profile" which is one of eight profiles produced for individual Local Authorities in the City Region which provides information specific to Wolverhampton on opportunities for the development of a Low Carbon Economy. In addition to this report there are other reports of relevance, which include seven further Local Authority reports, the Technical Report, which contains the background data and the City Region Report which looks at opportunities which affect more than one Local Authority and therefore could be supported by the City Region.

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Executive Summary

This report reviews the potential for the development of a Low Carbon Economy (LCE) in Wolverhampton. It follows on from a regional study commissioned by Advantage West Midlands and the West Midlands Regional Observatory in 2009 which identified eight key sectors that could play a key role in the delivery of a LCE across the West Midlands.

The 2009 high level review identified eight key sectors within the economy as providing low carbon opportunities based on the level of carbon regulation affecting the sector, the scale of opportunity, the existing regional strengths, existing regional action and availability of low carbon technologies. These sectors were: *manufacture of non-metallic mineral goods; manufacture of motor vehicles and transport; manufacture of metals, fabricated metal products and electrical equipment; construction; environmental goods and services; manufacture of food and beverages; transport, communication and storage, and; public services.* For each sector, key opportunities were identified and these focussed on decarbonising current products and services (such as replacing the use of a petrol vehicle to transport goods with a renewable vehicle), provision of low carbon products and services (such as freight delivery using rail), diversification into new low carbon products (such as manufacture of LEDs) or no opportunities being available. Examples of this include the manufacture of low carbon energy generation equipment by the “Metals” sector, the provision of low carbon buildings by the Construction sector and the use of more efficient equipment by the Non-Metallic Mineral Goods sectors. The study also identified a range of determining factors to the development of a LCE across the region. These included consumer demand, policy and regulatory regime, public procurement, physical and institutional infrastructure, skills and the planning regime. For each sector and for each determining factor a range of regional actions were identified.

This report identifies the key sectors of employment in Wolverhampton; key opportunities for Wolverhampton to protect or increase employment levels; any barriers relevant to Wolverhampton and suggested actions to take in order to overcome them. In addition, the report identifies City Region wide actions and initiatives which could be taken jointly by the local authorities as it is inevitable that these organisations will need to collaborate on these initiatives if they are to be successful.

The Wolverhampton profile was developed based on the following key inputs:

- *Economic Analysis:* Employment and business unit data to a 4 digit UK Standard Industrial Classification (SIC) of Economic Activities code level to understand the level of activity conducted by the eight key sectors operating within Wolverhampton. Changes in data over the five year period 2003 to 2008 have also been reviewed.
- *Sector Prioritisation:* Based on employment and business unit data and the previous study's ranking of the sectors, sectors have been prioritised with those sectors having the largest employment levels or highest number of business units and the most potential opportunities from the regional study being considered the highest priority.
- *Local Authority Interviews:* Interviews with one or more council officials from either the Economic Development and/or Climate Change teams to gain their view on the key opportunities, barriers, current actions and future potential actions to develop a LCE in their area.

Based on the information contained in each profile, a list of potential opportunities was developed in order to develop a LCE. Each opportunity has been assessed in terms of impact on jobs and for regulatory drivers.

The highest employment areas within the eight key sectors of low carbon opportunity within Wolverhampton were identified as public services; manufacture of metals, fabricated metal products and electrical equipment; transport, storage and communications, and; construction. Increases in employment were seen in motor vehicles and transport, manufacture of non-metallic mineral goods, public services and transport, storage and communications and decreases in employment were seen in environmental goods and services, farming, food and drink, manufacture of metals and construction.

Wolverhampton has access to a number of clusters, such as the University of Wolverhampton and the Knowledge Transfer Partnership, Wolverhampton Homes and the Environmental Partnership. Based on the ranking exercise, key opportunities for Wolverhampton were found to be manufacture of materials and fabricated metal products; construction; and, manufacture of motor vehicles and transport. Opportunities which have been assessed as having the potential to increase jobs included:

- Construction: low carbon design and construction of buildings; low carbon renovation of housing stock;
- Metal Manufacturing: the production of equipment for low carbon energy systems and vehicles in the metal manufacturing sector; low carbon processes
- Transport, Storage and Communications: Competitive advantage via sustainable logistics and use of rail freight; development/use of alternative fuels and associated infrastructure
- Environmental Goods & Services: Increased non-metal waste recycling; Continued establishment of metal waste and scrap sector; Development of electric motors/generators; Development of low carbon community energy companies
- Manufacture of food and beverages: Commercial opportunity from use of food wastes from large population.

Low carbon procurement, the provision of low carbon education and planning to support the LCE development were all considered to be important public sector opportunities.

Barriers were seen to include a lack of awareness of Low Carbon Economy and access to skills.

1. National & Regional Context

In December 2007, Advantage West Midlands produced a new Regional Economic Strategy for the West Midlands: *Connecting to Success*¹, endorsed by Jonathon Porritt, the then Chair of the UK Sustainable Development Commission. Hailed as a landmark strategy, *Connecting to Success* has been formally recognised as the UK's first low carbon economic strategy and has established Advantage West Midlands as a leader amongst the regions. The lessons from developing this strategy are featured in *Evidence of Success*².

The evidence base for this strategy helped to define for the first time what a low carbon economy is and what this meant to the West Midlands:

*"In the West Midlands a low carbon economy means an economy that will underpin a prosperous and thriving region through capturing the economic benefits of increasing efficiency whilst reducing direct carbon emissions and using the region's strengths in engineering, science and technology to deliver low carbon solutions to national and international markets. For **Business** this means fully capturing the opportunities for both existing industries and new enterprises to ensure the West Midlands region secures a reputation for profitable low carbon enterprise. For **People** this means up-skilling to secure the benefits from new employment opportunities emerging from a low carbon economy, along with behavioural change, to enhance quality of life. For **Place**, this means creating the conditions for growth by optimising transport networks and developing a low carbon built environment through energy efficiency and renewable materials".*
(AWM, 2007).

The evidence base for the development of the strategy helped to set out what a low carbon economy strategy should look like and the type of interventions to generate the biggest productivity gains and carbon reductions. One of the actions within the strategy was to "help identify low carbon economic and climate impact opportunities and risks for regional business and skills needs".

The low carbon agenda has progressed considerably over the past few years as understanding and scientific evidence for climate change has received universal acceptance, internationally, nationally and locally. As a result of international negotiations and commitments, the UK Climate Change Act 2008 established a legally binding target of 80% carbon emissions reduction by 2050; a target which will require significant and coordinated action across all sectors of the economy. Following the Climate Change Act the UK Government launched the Low Carbon Transition Plan³ which sets out how the UK will meet the 34% reduction in emissions required by 2020 detailing actions for individual sectors of the economy. In parallel, a number of associated commitments have been made, all of which will need to be implemented at a local level. These include the following:

- More than 1.2 million people will be in green jobs.
- 7 million homes will have benefited from whole house makeovers, and more than 1.5 million households will be supported to produce their own clean energy.
- Around 40 percent of electricity will be from low-carbon sources, from renewables, nuclear and clean coal.

¹ Connecting to Success, Advantage West Midlands, 2007

² Evidence of Success, Advantage West Midlands, 2008

³ The UK Low Carbon Transition Plan, HMG, 2009

- We will be importing half the amount of gas that we otherwise would.
- The average new car will emit 40 percent less carbon than now.

In order to achieve these targets, the Government has and is continually developing legislation, policy, strategies, plans and schemes. These will be applicable nationally, regionally, locally and even for individuals, and will contribute cumulatively to meet the commitments established internationally and through the UK Low Carbon Transition Plan.

Regionally there have been a number of relevant developments, including:

- Commitments from individual Local Authorities, through initiatives such as the Nottingham Declaration, to reduce carbon emissions.
- The Black Country Joint Core Strategy⁴ (directly relevant to four of the Local Authorities in this study) includes climate change as a key principle for the 2026 vision for the Black Country. It states
“The Core Strategy is a spatial plan..... It provides a clear spatial or locational dimension to the regeneration and renaissance of the area, addressing its economic, transportation, social infrastructure and environmental needs whilst reducing its carbon footprint and helping to tackle climate change”
- The recent announcement of the Low Carbon Economic Area for advanced automotive engineering within the region⁵.

The economic opportunities arising from the shift to low carbon and the implications for business models extend across the West Midlands economy. Significant Government investments have already begun, and will continue on all scales, impacting upon the opportunities available to drive the economy.

The Carbon Trust report, *Climate Change - a Business Revolution*⁶ shows how tackling climate change can create opportunities for a company to increase its value by up to 80% if it is well positioned and proactive. Conversely, it could threaten up to 65% of its value if a company is poorly positioned or a laggard.

Opportunities and risks in the economy are driven by shifts in consumer behaviour, technology and innovation and regulation. Targeted policies and support measures are therefore required as a key initiator of change across the West Midlands economy.

The first report in this study reviewed opportunities for the development of a Low Carbon Economy across the region. This report goes on to look at opportunities for the development of a Low Carbon Economy within individual Local Authorities within the City Region as well as the City Region as a whole.

⁴ <http://blackcountrycorestrategy.dudley.gov.uk/latest>

⁵ [http://www.advantagewm.co.uk/news-media-](http://www.advantagewm.co.uk/news-media-events/news/2010/midlandsdeclaredlowcarboneyconomicareaforadvancedautomotiveengineering.aspx)

[events/news/2010/midlandsdeclaredlowcarboneyconomicareaforadvancedautomotiveengineering.aspx](http://www.advantagewm.co.uk/news-media-events/news/2010/midlandsdeclaredlowcarboneyconomicareaforadvancedautomotiveengineering.aspx)

⁶ Carbon Trust (2008) *Climate Change – A Business Revolution* available from

http://www.carbontrust.com/publications/CTC740_business_rev%20v5.pdf

2. Introduction

In 2009, Atkins carried out research on behalf of AWM and West Midlands Regional Observatory (WMRO) to investigate the opportunities and barriers to the growth of a Low Carbon Economy (LCE) across the West Midlands region. This initial, high-level and region-wide research provided a broad indication of how well the business sectors within the West Midlands Economy are positioned to embrace the opportunities and risks associated with transition to a LCE.

The initial study was well received by WMRO and the group subsequently decided that more detailed research would be beneficial. The new study would assist decision makers at the local authority level, particularly those in the City Region, including Wolverhampton.

This report provides a more detailed review for Wolverhampton. It includes:

- More detailed economic data for employment and businesses specific to Wolverhampton
- Input from interviews with Wolverhampton officials
- Clusters relevant to Wolverhampton which may support the development of a Low Carbon Economy
- Barriers specific to Wolverhampton which may prevent opportunities being achieved
- Identification of opportunities relevant to Wolverhampton along with suggested actions
- An assessment of the opportunities for Wolverhampton in terms of supporting employment and meeting carbon regulation

A profile has also been generated for the City Region as a whole using City Region economic data and findings for each of the Local Authorities. This is relevant to Wolverhampton as opportunities and barriers have been identified which affect more than one Local Authority and suggested actions may be relevant to Wolverhampton.

3. Previous Relevant Studies

The key outputs from the previous regional studies are summarised below and key outputs have been included in Technical Report Section A and B of this report as noted below. The following has been taken from a URS study into the Low Carbon Evidence Base for the West Midlands Regional Observatory Economic Strategy (2007):

Sector Exposure: The level of exposure to climate change related regulatory change for key sectors was identified as being high, medium or low risk. The potential exposures for sectors were assessed for both products and services and for operations (see Table A1 in Technical Report Section A)

Local Authority Exposure: The level of exposure to climate change related regulatory change for Wolverhampton was identified. This identified both the percentage of employees and businesses at high risk of being affected by carbon reduction policies (see Table A2 in Technical Report Section A).

The following has been taken from the Atkins 2009 Regional Low Carbon Economy study:

Sectors: Individual business numbers and people employed across all sectors for the West Midlands were analysed (see Table A3 in Technical Report Section A). Eleven sectors were identified as currently making a large contribution to the West Midlands economy (in terms of employment and business size). These are identified below:

- Business Services (including finance & insurance)
- Construction
- Environmental Goods and Services
- Farming, Food and Drink
- Manufacture of Motor Vehicles and Transport equipment
- Manufacture of Metals, Machinery & Equipment and Electrical Equipment
- Manufacture of Non-Metallic Mineral Products (glass & ceramics).
- Public Sector Services (incorporating, Education, Health & social work and Public administration & defence)
- Tourism & Leisure (incorporating Hotels & Restaurants and elements of Other Community services)
- Transport, Storage & Communications
- Wholesale & Retail Trade

Low Carbon Opportunities: Specific low carbon opportunities were identified for each of the employment sectors identified, (see generic opportunity profiles in Technical Report Section B). The objective of this analysis was to show how organisations can reduce carbon across their operations, products and services, and therefore give an indication of how regional and local bodies can focus their efforts to assist the strategic shift to a Low Carbon Economy. The generic profiles also summarise regional activity and opportunities in these sectors and also relationships between the sectors.

The regional study identified key sectors which present the greatest opportunity in terms of development of a Low Carbon Economy to the region. Using the following criteria: (i) Carbon Regulation and policy encouraging the development of a Low Carbon Economy in the sector, (ii) the Scale of Opportunity for the particular sector based on size of the sector, (iii) Existing Regional Strengths relevant to the sector, (iv) Existing Regional Action relevant to the sector, (v) Low Carbon Technologies available for the sector an evaluation was undertaken of the 11 key sectors to determine where the best opportunities for future growth lie. A simple scoring methodology was used to qualitatively evaluate these opportunities on the following basis: (H: High opportunity (3); M: Medium opportunity (2); L: Low opportunity (1)). These scores were then summed across the

above criteria for each of the above 11 sectors. The results of this evaluation are outlined in Table A4 in Technical Report Section A. The eight sectors identified as providing the most opportunity in the region were identified as follows:

- Construction
- Environmental Goods and Services
- Farming, Food and Drink
- Manufacture of Metals, Fabricated Metal Products and Electrical Equipment
- Manufacture of Motor Vehicles and Transport
- Manufacture of Non-Metallic Mineral Goods
- Public Services
- Transport, Storage and Communication.

Barriers and Potential Interventions: Table A5 in Technical Report Section A summarises the key factors with the potential to constrain and/or drive the development of a LCE in the region along with potential government interventions to assist and possible areas of regional influence.

Sector Wide Opportunities, Barriers and Regional Solutions: Table A6 in Technical Report Section A summarises for each sector the key opportunities for the sector, the potential barriers and regional solutions which may be available plus an indication of whether the suggested actions are short-term, medium-term or long-term.

4. Project Aims & Intended Audience

4.1 Project Aims

The overall objective of this project is to give each City Region Local Authority more detailed information to support the strategic planning for the LCE within their Authority. In summary the main aims for Wolverhampton are:

- To understand key employment in Wolverhampton
- To identify key opportunities for Wolverhampton to protect or increase employment
- To identify any barriers and key actions for Wolverhampton to support the development of a LCE
- To determine which actions across the City Region can be undertaken in collaboration by the City Region and Local Authorities

4.2 Intended Audience

The findings of this part of the study are directed towards officials working within the Local Authority, plus the City Region, the West Midlands Regional Observatory and Advantage West Midlands. In addition there are a range of other stakeholders to whom this project will be of interest including business support organisations and public and private sector organisations. Each of these stakeholders will need to identify and consider their role in the delivery of the LCE, both individually and in partnership with other stakeholders. However, a summary is outlined below of how each of the principle stakeholders could use this report to assist the strategic shift to a LCE:

- **Sub-regional policy makers** – to understand the implications and actions required within local economic assessments and strategies to deliver a lower carbon economy through planning control and land-use policies.
- **Business support organisations** – to understand the drivers, opportunities and interventions required to assist the transition to a LCE.
- **Individual public and private sector organisations** – to understand and develop the opportunities for their sector.

5. Project Methodology

The delivery of this project has been divided into a number of elements.

Economic Analysis

Using the eight key sectors identified in the initial study analysis of both employment and business unit to a 4 digit UK Standard Industrial Classification of Economic Activities (SIC) code level has been undertaken using 2008 data available on NOMIS for each Local Authority. This provides detailed information for Wolverhampton on exactly what type of activity is taking place within their area. For the employment analysis the Annual Business Inquiry (ABI) Employee Analysis data available on NOMIS was used, which is an employer survey of the number of jobs held by employees. The NOMIS survey records a job at the location of an employee's workplace. For the Business Unit analysis the Annual Business Inquiry (ABI) Workplace Analysis data available on NOMIS was used, which is a survey of the number of workplaces in an area. The data is presented using the following broad categories:

- Construction
- Environmental Goods and Services
- Farming, Food and Drink
- Manufacture of Metals, Fabricated Metal Products and Electrical Equipment
- Manufacture of Motor Vehicles and Transport
- Manufacture of Non-Metallic Mineral Goods
- Public Services
- Transport, Communication and Storage

The output of this analysis is provided in below and supporting data is provided in Technical Report Section C (for business unit data), Technical Report Section D (for employment data) and Technical Report Section E (sectoral change over the period 2003 to 2008). Please note data provided in this report has been rounded to the nearest 100 (unless <100) for employment figures and the nearest 10 for business units, as recommended by the Office of National Statistics.

Identification of key sectors of opportunity for each Local Authority

The eight key sectors this study focuses on have been selected based on the work undertaken at a regional level as part of the 2009 AWM Regional Study undertaken by Atkins. This study has been reviewed and tested by a number of regional groups and has been well received. In order to identify which of these sectors provide the most opportunity for development of a LCE in Wolverhampton the following elements have been ranked to provide key sectors of focus for Wolverhampton:

- Wolverhampton's employment data (both number of jobs and number of businesses)
- Sectoral opportunities based on the regional study (as reproduced in Table A4 in Technical Report Section A)

The key sectors with opportunities in the LCE are reported in section 8 below.

Interviews/workshops within each Local Authority

A structured interview was undertaken with one of more officials of the Local Authority's Economic Development Department and/or Climate Change/Environmental Department. The interview was intended to capture the officials' views on the following key areas:

- Review of Wolverhampton's key sector opportunities
- Review of barriers for each sector and general barriers
- Identification of key geographical clusters within Wolverhampton
- Identification of potential policy interventions and recommendations

The results of the interview has been utilised in the in the development of this report and a summary of the interview is provided in Technical Report Section F.

Development of Wolverhampton's Profile

Using the information gathered above, a Profile was developed for Wolverhampton. This profile contains a summary of key information relevant to Wolverhampton, as follows:

- A prioritised set of key sectors
- A set of specific opportunities for Wolverhampton.
- Relevant geographical clusters
- Any specific barriers for Wolverhampton
- Potential policy interventions or other recommendations

Assessment of opportunities

Opportunities have been assessed for impact on jobs and in meeting carbon legislation.

Jobs: Taking each of the key opportunities identified for Wolverhampton, as discussed above, the impact of implementation on jobs within the area has been assessed. For example, if the only opportunities available were simply to meet regulation as implemented, this may lead to a continuing to diminish workforce, whereas if the sector could be the first in the UK to patent a low carbon technology this could dramatically increase the workforce. For opportunities that have the potential to significantly contribute to an increase in employment levels (i.e. greater than 10% growth within that sector for a particular region) they have been identified as being of regional significance. It is stressed that the ability to predict employment growth is, by its nature, imprecise and dependent upon a number of variables. We must emphasise, therefore, that our estimates are, at best, indications of opportunities with the potential to increase employment. They do not constitute a guaranteed or reliable estimate of employment levels in these sectors in the future.

Regulatory and other key drivers: Each opportunity has been assessed for the impact of the opportunities on meeting carbon legislation and other relevant key Governmental drivers, such as the Climate Change Act, Carbon Budget Orders, Emissions Trading, the Carbon Reduction Commitment the Renewable Transport Fuel Obligation, the Environmental Transformation Fund, etc.

City Region-wide Opportunities: The relevance of each opportunity has been considered for each Local Authority and where an opportunity is relevant to a number of Local Authorities and a joint approach is considered beneficial this opportunity has been determined as a City Region opportunity.

The opportunity assessments are provided in Section 10 and a summary of key regulatory and policy drivers is provided in Technical Report Section G.

6. Local Authority Context

In 2006, Wolverhampton signed a Declaration on Climate Change as part of its commitment to the Nottingham Declaration, and as a result, has made a commitment to tackle the causes and effects of climate change on the city. A local target has been set to reduce the city's carbon dioxide emissions by at least 35% by 2026 and a short-term target of 12% by 2012 (from 2005 levels). The Council is working with the Wolverhampton Partnership (a Strategic Board and a number of 'thematic' partnership groups with representation from the public, business, voluntary and community sectors to cover health and well being, strategic housing, economic partnership, green city group, children and young people's partnership, safer partnership and the learning partnership) to develop and implement Wolverhampton's Climate Change Strategy and associated Action Plan⁷.

Wolverhampton City Council has already begun to take action by:

- Producing a Carbon Management Plan Strategy and Implementation Plan in conjunction with the Carbon Trust
- Invested in an Energy Saving Regeneration and Development Scheme to reduce energy consumption in existing buildings in the city
- Led or participated in a number of communication activities and events
- Reducing energy in its own operations within the community e.g. street lighting

Figure 6.1 sets out the employment by sector in the conurbation of Wolverhampton based on the NOMIS survey data compared to the rest of the City Region. Employment is dominated by the public services sector at 60%. Manufacturing is important accounting for a quarter of employment, with the manufacture of metals being most important.

Figure 6.2 shows the relative employment within the eight key sectors compared to the City Region and West Midlands as a whole. Manufacture of Metals and Manufacture of Non-Metallic Mineral Goods, Manufacture of Motor Vehicles and Public Services are strong relative to the rest of the area.

Figure 6.1 – Wolverhampton’s employment in the eight key sectors of low carbon opportunity compared to the rest of the City Region

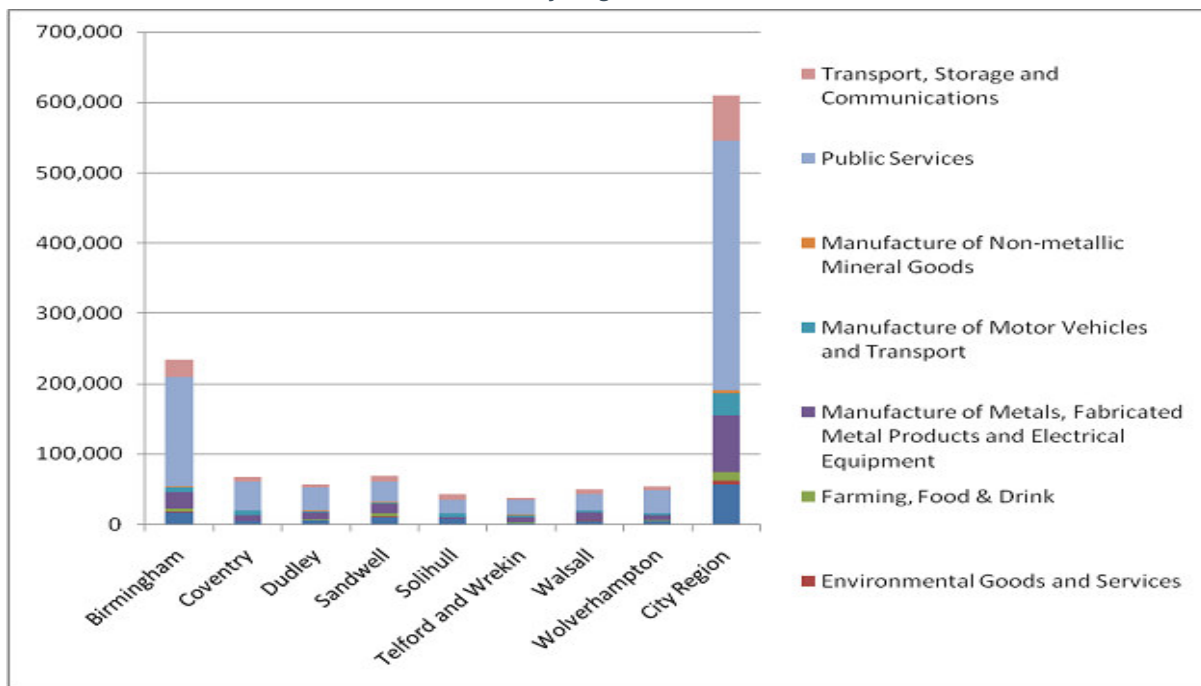
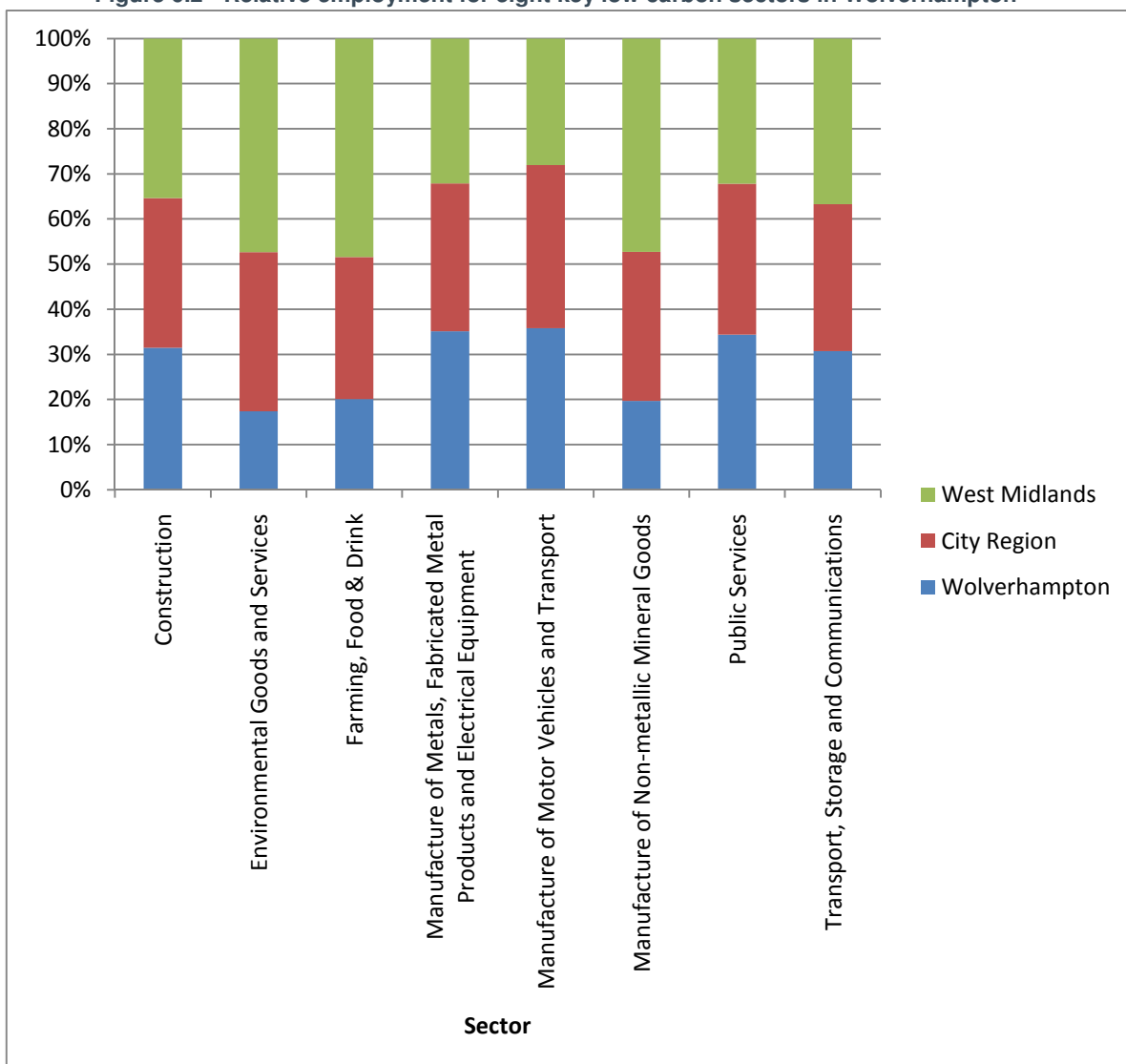


Figure 6.2 - Relative employment for eight key low carbon sectors in Wolverhampton



The Annual Business Inquiry analysis which looks in depth at particular strengths within each of these sectors found specific specialism in the areas shown below.

Table 6.1 - Key Sub-sector Specialisms within Wolverhampton for Employment and Businesses (based on 2008 data)

Sector	Relative strengths compared to rest of City Region	Largest Employment Subsectors (by number)	Largest Business No. Subsectors
Manufacture of Materials and Fabricated Metal Products	Strong in aluminium production; bearings, gears, gearing and driving elements; machinery for metallurgy. Medium in fasteners, screw machine products, chains and springs; pumps and compressors; other agricultural and forestry machinery; cast iron tubes; cold drawing; cold rolling of narrow strips; machinery for metallurgy; copper production; cold forming or folding; manufacture of taps and valves; wire products; electric domestic appliances; insulated wire and cable	(Limited statistics available) Treatment and coating of metals (1000) General mechanical engineering (600) Forging, pressing, stamping and roll forming of metal; powder metallurgy (600)	(Limited statistics available) General mechanical engineering (90) Manufacture of other fabricated metal products not elsewhere classified (40) Treatment and coating of metals (30)
Construction	Strong in construction of highways, roads, airfields and sports activities; plastering	General construction of buildings and civil engineering works (1,500) Construction of highways, roads, airfields and sports facilities (1,200) Installation of electrical wiring and fittings (500)	General construction of buildings and civil engineering works (180) Installation of electrical wiring and fittings (100) Plumbing (80)
Manufacture of motor vehicles and transport	Strong in building and repairing of ships; railway and tramway locomotives and rolling stock; Medium in invalid carriages; other transport equipment; aircraft and spacecraft; repairing of pleasure and sporting boats	(Limited statistics available) Manufacture of railway and tramway locomotives and rolling stock (1,200) Manufacture of aircraft and spacecraft (1,200) Manufacture of parts and accessories for motor vehicles and their engines (100)	No detailed statistics available.
Manufacture of Non-Metallic Goods	Strong in mortar manufacture. Medium in manufacture of concrete products for construction purposes; other articles of concrete, plaster and cement; cutting, shaping and finishing of stone; abrasive products	(Limited statistics available) Shaping and processing of flat glass (90) Cutting, shaping and finishing of stone (40) Manufacture of concrete products for construction purposes (27)	No detailed statistics available.

Sector	Relative strengths compared to rest of City Region	Largest Employment Subsectors (by number)	Largest Business No. Subsectors
Public Services	Medium in adult and other education; regulation of agencies; general public services activities; regulation and efficiency improvements of business	Hospital activities (6,300) Primary education (4,400) Higher education (3,200)	(Limited statistics available) Social work activities without accommodation (200) Regulation of the activities of agencies that provide health care, education, cultural services and other social services excluding social security (120) Primary education (100)
Transport, Storage & Communications	Strong in water transport activities. Medium in scheduled passenger land transport; land transport activities; activities of other transport agencies	(Limited statistics available) Other scheduled passenger land transport (1,500) Other passenger land transport (900) Transport via railways (800)	(Limited statistics available) Freight transport by road (150) Courier activities other than national post activities (110) Activities of travel agencies and tour operators; tourist assistance activities not elsewhere classified (30)
Environmental Goods and Services	Medium in recycling of metal waste and scrap; non-metal waste and scrap; manufacture of electricity distribution and control apparatus; manufacture of electric motors, generators and transformers	Recycling of non-metal waste and scrap (70) Manufacture of electric motors, generators and transformers (50) Recycling of metal waste and scrap (40)	No detailed statistics available.
Farming Food and Drink	Strong in processing and preserving of potatoes. Medium in manufacture of ice cream; mineral waters and soft drink; production and preserving of poultry meat; manufacture of other food products; production of meat and poultry meat products; manufacture of beer; processing and preserving of fruit and vegetables	(Limited statistics available) Production of meat and poultry meat products (300) Manufacture of beer (100) Production and preserving of poultry meat (100)	No detailed statistics available.

Manufacturing of motor vehicles and transport accounted for 5% of employment however the sector experienced an 84% increase from 2003 to 2008. Increases in employment were also seen in:

- Manufacture of non-metallic mineral goods (7%);
- Public services (8%); and,
- Transport, storage and communications (6%).

Conversely significant falls in employment was experienced in the following sectors:

- Environmental goods and services (-55%);
- Farming, food and drink (-42%);
- Manufacture of metals (-26%); and,
- Construction (-22%).

7. Clusters

Clusters or networks of research, similar company types, networks, etc can help facilitate the development of a LCE. Key clusters for the Wolverhampton MBC area include:

- **West Midlands Manufacturing Advisory Service** – assists manufacturing businesses in the region as they strive to become fit for the future.
- The West Midlands being designated as a “**Low Carbon Economic Area**” for **Advanced Automotive Engineering**
- **University of Wolverhampton and the Knowledge Transfer Partnership**, which includes strand of environmental issues
- **Business Link West Midlands** - “Grant finder” and business support services
- **The Environmental Partnership** made up of the Environment Agency, Natural England, Centro, the Groundwork Trust and Wolverhampton City Council.
- The council is part of the **City Region Climate Change Partnership** along with other Local Authorities
- **Wolverhampton Homes** – runs programmes such as Health through warmth and provides grant e.g. for insulation
- **West Midlands Centre for Constructing Excellence (West Midlands Centre for Constructing Excellence)**. The West Midlands Centre for Constructing Excellence provides specialist business improvement assistance specifically to help local businesses in the construction and building technologies sectors. Eligible businesses in the West Midlands can benefit from subsidised, or in some cases fully-funded, business improvement services.
- **National Industrial Symbiosis Programme (NISP)** NISP has been operating in the West Midlands since 2003. NISP uses industrial symbiosis to identify sustainable resource management solutions for businesses. Its main aim is to help businesses improve resource efficiency and reduce waste. Industrial symbiosis engages traditionally separate industries with the aim of improving cross industry resource efficiency through the commercial trading of materials, energy and water and sharing assets, logistics and expertise.
- **Agri-technology research** at research centres such as University of Wolverhampton. There could be scope for the research and science ideas coming forward from the research base to be exploited by firms within the agri-technology sector.
- A range of national and regional clusters with a sector specific focus, including those led by Advantage West Midlands and the Carbon Trust. More details are given in the generic profiles in Section B of the Technical Report.

8. Opportunities

In order to identify which of the sectors provide the most opportunity for development of a LCE within Wolverhampton the following have been ranked to provide key sectors of focus:

- Local Authority employment data (both number of jobs and number of businesses) for 2008 taken from the relevant ABI reports
- Sectoral opportunities based on the findings of the Regional study (as presented in Table A4 of Technical Report Section A)

Table 8.1 below shows the outcome of the ranking exercise for Wolverhampton (the lower the overall ranking the higher the opportunity has been calculated to be for that particular sector). For Wolverhampton the sectors showing the largest opportunities based on the regional study and employment and business numbers within the Wolverhampton area are manufacturing of materials and fabricated metal products, construction and manufacturing of motor vehicles and transport

Table 8.1 - Ranking of Sectors for Low Carbon Opportunities for Wolverhampton

Sector	Opportunity Ranking	Employment Ranking	No. of Businesses Ranking	Overall Ranking (=A+(B+C)/2))
Manufacture of Materials and Fabricated Metal Products	3 (14)	2 (7581)	3 (442)	5.5
Construction	3 (14)	4 (4742)	2 (730)	6
Manufacture of Motor Vehicles and Transport	1 (15)	5 (2721)	5* (Not disclosed)	6
Manufacture of Non-Metallic Goods	1 (15)	7 (222)	7* (Not disclosed)	8
Public Services	7 (12)	1 (31,849)	1 (913)	8
Transport, Storage & Communications	7 (12)	3 (5356)	4 (402)	10.5
Environmental Goods and Services	3 (14)	8 (196)	8* (Not disclosed)	11
Farming Food and Drink	6 (13)*	6 (663)	6* (Not disclosed)	12

These sectors are considered to be attractive to Wolverhampton for the following reasons:

- **Manufacture of Materials and Fabricated Metal Products:** Wolverhampton has reasonable levels of employment relative to the rest of the city region (although this has decreased from 2003 to 2008) and has particular strengths in a range of specific sub-sectors, e.g. aluminium production, bearings and gearings, metallurgy and machinery. There are two key pressures on this sector. Firstly increased energy costs and therefore opportunities are in the form of lean manufacturing for the sector to retain competitiveness and reduce carbon emissions. Secondly in the carbon emissions related to the end use of the products produced, which could provide an opportunity for re-design of the products to reduce their carbon impact and opportunities to link up to new “low carbon product” designers.
- **Construction:** Wolverhampton has reasonable levels of employment across the construction sector, with general construction and building and construction of highways, roads, airfields and sports facilities being a particular strength. Regulatory pressure to reduce carbon

emissions associated with building construction provide opportunity to the sector and low carbon construction techniques and materials provide opportunities e.g. use of CEEQUAL, low carbon design issues related to highways.

- **Manufacture of Motor Vehicles and Transport:** Wolverhampton has strength in this area in the building and repairing of ships, manufacture of railway and tramway locomotive stock and aircraft and spacecraft sub-sectors. Decarbonising the sector is important; however production of low carbon products throughout the supply chain (e.g. lightweight materials, low waste, and low energy materials) to reduce the overall carbon footprint of vehicles produced is particularly important to the aircraft sector with the introduction of Phase III of the European Emissions Trading Scheme impacting across Europe.

9. Barriers

Table 9.1 below summarises the general barriers identified for the Wolverhampton City Council area in the development of a LCE. These are based on the interview with Wolverhampton City Council plus those relevant which were identified during the regional study (shown in Table A5, Technical Report Section A).

Table 9.1 - Summary of Region-wide and Wolverhampton Specific Barriers to the Development of a LCE

Factor	Potential to Constrain LCE Transition	Potential to Drive LCE Transition	Possible Government Interventions to Assist	Regional Influence	Local Authority Influence
				(*** = Very Strong ** = Fairly Strong * = negligible)	
Consumer Demand	<ul style="list-style-type: none"> Consumers will not pay a premium purely for greener products. Lack of incentives for businesses and consumers to move to low carbon products/services 	<ul style="list-style-type: none"> Sufficient market demand will drive commercialisation of energy and environmental technologies. 	<ul style="list-style-type: none"> Carbon regulation & legislation including targeted sector-specific initiatives. Must send clear and transparent signals of its strategic intentions to alter business planning and investment. Help to ensure market demand (through procurement). 	<ul style="list-style-type: none"> Can assist in terms of procurement (e.g. PSFPI). 	<ul style="list-style-type: none"> Develop grants for householders and businesses to incentivise uptake of products/services. E.g. for renewable energy Procure products/services to stimulate demand Provide access to information on low carbon products/services e.g. in libraries, free public seminars, etc
Policy & Regulatory Regime	<ul style="list-style-type: none"> No clear statement of government intentions 	<ul style="list-style-type: none"> If clear, policy will drive business planning decisions and investment and affect consumer demand. 	<ul style="list-style-type: none"> Ensure market demand (see procurement below) Create Markets for environmentally friendly attributes or credits. Provide extra financial backing Business development assistance. Action to incentivise and facilitate low carbon or other technologies. Co-ordination of policy at national, regional & local level. 	<ul style="list-style-type: none"> Region has role to play in co-ordinating action, particularly at the sectoral level. Development of LCEA be n the West Midlands 	<ul style="list-style-type: none"> Keep under review range of potential technologies which could be used by the council to reduce area's overall carbon emissions Liaise with regulatory bodies on issues where low carbon initiatives are hindered by current regulatory framework

Factor	Potential to Constrain LCE Transition	Potential to Drive LCE Transition	Possible Government Interventions to Assist	Regional Influence	Local Authority Influence
				*** = Very Strong	
				** = Fairly Strong	
				* = negligible)	
			<ul style="list-style-type: none"> Low Carbon Economic Areas (LCEA). 		
Public Procurement	<ul style="list-style-type: none"> Government needs to lead by example. 	<ul style="list-style-type: none"> Purchasing power of public sector can help reduce risk of uncertainty over the scale of demand and price. 	<ul style="list-style-type: none"> Innovation Procurement Plans by Central Government Small Business Research Initiative Retrofit for the future. Ultra Low Carbon Vehicles 	** <ul style="list-style-type: none"> Local/regional procurement (PSFPI). Access some of the schemes at a regional level. 	<ul style="list-style-type: none"> Use public sector procurement to purchase low carbon products and services and where possible procure locally to stimulate sector Use the "Think Walsall" initiative to support social, economic and environmental benefits from developments and support businesses with –public sector procurement
Physical & Institutional Infrastructure	<ul style="list-style-type: none"> Inefficient and not conducive to low carbon activities 	<ul style="list-style-type: none"> Help drive business growth and sustainable transport. 	<ul style="list-style-type: none"> IT & Digital Infrastructure- universal broadband commitment. Flexible intellectual property system. Transformation of energy infrastructure. Waste infrastructure. Transport Infrastructure. Implement Carbon Reduction Strategy for Transport. 	*** <ul style="list-style-type: none"> High-quality low carbon employment land/premises. Community energy generation initiatives. Strategic regeneration WIDP & WRAP to be utilised by local authorities. Assist freight & logistics sector to adapt. 	<ul style="list-style-type: none"> Support development of low carbon infrastructure via long-term development plan for Local Authority including key infrastructure, e.g. waste, transport, energy
Skills	<ul style="list-style-type: none"> Insufficient skills base to exploit business opportunities 	<ul style="list-style-type: none"> Competitive advantage to drive forwards low carbon products. 	<ul style="list-style-type: none"> Address shortage in many essential skills areas: Science, Technology, Engineering and Mathematics. Communication, leadership and 	*** <ul style="list-style-type: none"> Work with sector skills councils. Commission further research to understand specific job and skills requirements of the 	<ul style="list-style-type: none"> Encourage current population base to undertake training and skill development, which includes low carbon Liaise with Wolverhampton

Factor	Potential to Constrain LCE Transition	Potential to Drive LCE Transition	Possible Government Interventions to Assist	Regional Influence	Local Authority Influence
				(*** = Very Strong	
				**= Fairly Strong	
				*= negligible)	
			management skills.	opportunities.	University and relevant colleges within Local Authority area over development of stand-alone low carbon programmes or integration of low carbon into specific programmes
Planning Regime	<ul style="list-style-type: none"> Impede development of LCE, slowing delivery. 	<ul style="list-style-type: none"> Accelerate process, particularly in terms of supporting businesses seeking to improve energy efficiency 	<ul style="list-style-type: none"> Commitment that most new homes be zero carbon by 2016 relies on planning system not slowing down construction. 	<p>**</p> <ul style="list-style-type: none"> Regional Planning Bodies (integrated RES/RSS) 	<ul style="list-style-type: none"> Support development of low carbon infrastructure via long-term development plan for Local Authority including key infrastructure, e.g. waste, transport, energy, homes Consider development of high technology green business park
Lack of entrepreneurial start up money available to companies	<ul style="list-style-type: none"> Lack of low carbon focussed companies will reduce level of low carbon products/ services available 	<ul style="list-style-type: none"> Establishment of base of low carbon companies may lead to cluster of companies forming leading to employment in the area 	<ul style="list-style-type: none"> Establishment and development of low carbon grants/funds e.g. Carbon Trust Incubator 	<ul style="list-style-type: none"> Provide focussed grants/funds for regional development of low carbon organisations 	<ul style="list-style-type: none"> Offer directly or encourage third parties to offer businesses grants/loans to incentivise development of LCE
Lack of awareness of low carbon opportunities or regulation	<ul style="list-style-type: none"> Lack of awareness may prevent businesses realising opportunities and failing to comply with regulation 				<ul style="list-style-type: none"> Raise awareness of low carbon opportunities and current/future regulation for business via seminars, networking events, pilot projects etc. For example the council could supply energy efficiency monitors / intelligent energy controllers to encourage businesses to watch their energy use more closely Provide specialist support to businesses e.g. via Carbon

Factor	Potential to Constrain LCE Transition	Potential to Drive LCE Transition	Possible Government Interventions to Assist	Regional Influence	Local Authority Influence
				*** = Very Strong	
				** = Fairly Strong	
				* = negligible)	
					Trust or LA in-house team. This could include encouraging businesses to consider diversification opportunities into cleaner technology / low carbon products

The generic opportunities for each sector are provided in the Generic Profiles in Technical Report Section B. Table 9.2 below summarises the opportunities available to each sector within Wolverhampton given the specific employment in that sector within Wolverhampton (see above), the relevant clusters (see above), sector-specific opportunities (see Sector Profiles – Technical Report Section B) and key regulatory/policy drivers (see Section 10.2). The Table provides a summary of potential opportunities, possible barriers to those opportunities being achieved and potential interventions the council could take to support the development of a LCE for the particular sector. This information is based on both the regional study and interviews with individuals within the council. An assessment has also been made of the ease of implementation for each action identified for the Local Authority. The assessment is based on potential cost, time input required, technical considerations, likelihood of success.

Table 9.2 - Opportunities, Barriers and Suggested Local Authority Actions for Wolverhampton

Sector	Opportunities for Sector within Sub-region	Barriers to Success within Sub-region	Local Authority Intervention Measures to Overcome Barriers	Ease to implement*
Manufacture of metals and fabricated metal products and electrical equipment	<ul style="list-style-type: none"> • Production of parts for low carbon equipment including low carbon energy and vehicle parts. (e.g. CHP, Biomass plant, Wind power, Energy efficient equipment – industrial motors, domestic heating, etc) • Decarbonising current processes 	<ul style="list-style-type: none"> • Ability to retro-fit • Financing • Skills to develop • Development of technologies • Incentives or regulation to encourage use • Skills • Lack of demonstration/pilot • Higher costs 	<ul style="list-style-type: none"> • Establishment of links/network or actual development of design centre to link current manufacturers in this sector to designers of low carbon end products 	✓
			<ul style="list-style-type: none"> • Economic development initiatives – training in product development with Business Link and other stakeholders (e.g. Chambers of Commerce and local colleges) 	✓✓
			<ul style="list-style-type: none"> • Apply for European funding for grants to undertake training and consultancy to assist with new low carbon product development. 	✓
			<ul style="list-style-type: none"> • Undertake publicity campaigns, seminars and breakfast meetings with local businesses to raise awareness of low carbon opportunities 	✓✓✓
			<ul style="list-style-type: none"> • Identify priority locations for use of end products within area (e.g. CHP, LEDs, biomass plants) and use local procurement techniques to stimulate local market 	✓✓
			<ul style="list-style-type: none"> • In general, support skills development 	✓✓
			<ul style="list-style-type: none"> • Generate case studies for local businesses 	✓✓✓
Construction	<ul style="list-style-type: none"> • Low carbon design – buildings, roads - Low carbon civil engineering 	<ul style="list-style-type: none"> • Consumer Demand • Value to provider 	<ul style="list-style-type: none"> • Apply for European funding for grants to undertake training and consultancy to assist with new low carbon product development. 	✓

Sector	Opportunities for Sector within Sub-region	Barriers to Success within Sub-region	Local Authority Intervention Measures to Overcome Barriers	Ease to implement*
	techniques e.g. CEEQUAL - BREEAM certified buildings • Use of low carbon materials e.g. via recycling or identification of low carbon materials • Use of low carbon equipment/machinery	• Perception of higher costs • Actual higher capital costs • Skills within sector • Lack of low carbon infrastructure • Availability and awareness of energy efficient equipment	• Undertake publicity campaigns, seminars and breakfast meetings with local businesses to raise awareness of low carbon opportunities	✓✓✓
			• Support development of low carbon tools for the sector e.g. low carbon design tools, travel tools for road design	✓✓
			• Work with research institutions or develop pilot projects for use of low carbon building/civil engineering materials	✓
			• Generate case studies for local businesses	✓✓
			• Ensure council funding and public procurement encourages low carbon methods	✓✓
			• Support training with Skills Council	✓✓
			• Develop Local Authority network of suppliers, buyers and recyclers locally (e.g. via NISP)	✓✓
Manufacture of automotive and transport equipment	• Decarbonising current processes • low carbon vehicle design particularly focussing on the boat, railway and aircraft sectors e.g. use of biofuels, Brake energy regeneration, lightweight construction, efficient engine technologies, energy and heat management in the vehicle, recyclable vehicles, Intelligent Navigation Systems	• Development and proof of technologies • Capital • Skills	• Provide advice across sector, either via NISP, Carbon Trust or own team	✓✓
			• Work with key employers on identifying worldwide best practice in particular sectors.	✓✓
			• Encourage companies to engage in low carbon discussions relevant to their sector	✓✓
			• Economic development initiatives – training in product development with Business Link and other stakeholders (e.g. Chambers of Commerce and	✓✓

Sector	Opportunities for Sector within Sub-region	Barriers to Success within Sub-region	Local Authority Intervention Measures to Overcome Barriers	Ease to implement*
			local colleges)	
			<ul style="list-style-type: none"> • Apply for European funding for grants to undertake training and consultancy to assist with new low carbon product development. Examples include Ecoordinated in Wolverhampton 	✓
			<ul style="list-style-type: none"> • Undertake publicity campaigns, seminars and breakfast meetings to raise awareness of opportunities 	✓✓✓
			<ul style="list-style-type: none"> • Generate case studies for local businesses. 	✓✓✓
			<ul style="list-style-type: none"> • In general, support skills development 	✓✓
Manufacture of non-metallic mineral goods	<ul style="list-style-type: none"> • Cost savings by more efficient and low carbon vehicles and equipment e.g. to reduce cost associated with glass cutting and shaping 	<ul style="list-style-type: none"> • Consumer Demand • Value to provider • Perception of higher costs • Actual higher capital costs • Skills within sector 	<ul style="list-style-type: none"> • Apply for European funding for grants to undertake training and consultancy to assist with new low carbon product development. 	✓
			<ul style="list-style-type: none"> • Economic development initiatives – training in product development with Business Link and other stakeholders (e.g. Chambers of Commerce and local colleges) 	✓✓
	<ul style="list-style-type: none"> • Use and development of low carbon products e.g. alternatives to concrete 	<ul style="list-style-type: none"> • Lack of low carbon infrastructure • Availability and awareness of energy efficient equipment 	<ul style="list-style-type: none"> • Undertake publicity campaigns, seminars and breakfast meetings to raise awareness of opportunities to sector 	✓✓✓
			<ul style="list-style-type: none"> • Develop supportive planning and economic development policies to encourage production of sustainable products 	✓✓
			<ul style="list-style-type: none"> • Sponsor low carbon demonstration project for the construction sector (e.g. use of low carbon alternative materials) 	✓

Sector	Opportunities for Sector within Sub-region	Barriers to Success within Sub-region	Local Authority Intervention Measures to Overcome Barriers	Ease to implement*
			<ul style="list-style-type: none"> Develop network of suppliers, buyers and recyclers locally within sub-region, but with co-ordination across the region. 	✓✓
			<ul style="list-style-type: none"> Generate case studies for local businesses 	✓✓✓
Public services	<ul style="list-style-type: none"> Ability to procure low carbon services for the sector Decarbonisation of current products/services/buildings Provision of low carbon education 	<ul style="list-style-type: none"> Lack of training or understanding of approach for procurement sector Ability to deliver by service providers Budgetary constraints Range of other priorities e.g. efficiency cuts, providing high performing services, etc 	<ul style="list-style-type: none"> Set targets for reductions in carbon emissions from across the sector 	✓✓
			<ul style="list-style-type: none"> Undertake strategic review of operations to determine possible ways to reduce carbon emissions for each element of the public services 	✓✓
			<ul style="list-style-type: none"> Undertake internal publicity campaigns, seminars and breakfast meetings to raise awareness of low carbon opportunities 	✓✓✓
			<ul style="list-style-type: none"> Provide guidance/support on sustainable/low carbon procurement for public sector and private sector 	✓✓
			<ul style="list-style-type: none"> Consider how the Local Authority can directly influence the transition to a LCE through procurement and planning policies. This will include Highways and Transportation, Waste Management a, Education, Hospitals well as Social Services and other Community services. 	✓✓
			<ul style="list-style-type: none"> Demonstrate best practice in own procurement and funding methods. 	✓✓
			<ul style="list-style-type: none"> Generate case studies showing examples of low carbon initiatives. 	✓✓✓

Sector	Opportunities for Sector within Sub-region	Barriers to Success within Sub-region	Local Authority Intervention Measures to Overcome Barriers	Ease to implement*
Transport, storage and communications	<ul style="list-style-type: none"> sustainable logistics for inbound and outbound distribution transports and increasing of rail freight Development of alternative fuels and associated infrastructure (e.g. biofuels, hydrogen produced free of CO2) Use of low carbon vehicles and premises 	<ul style="list-style-type: none"> Infrastructure for fuels Capital Proven technology New designs needed at cost effective prices Manufacturers already invested in low efficiency products Lack of emissions regulation or method to calculate emissions via supply chain 	<ul style="list-style-type: none"> Apply for European funding for grants to undertake training and consultancy to assist with new low carbon product development 	✓
			<ul style="list-style-type: none"> Undertake publicity campaigns, seminars and breakfast meetings to raise awareness of opportunities 	✓✓✓
			<ul style="list-style-type: none"> Develop consistent method for measuring and reporting on carbon emissions for the supply chain industry 	✓✓
			<ul style="list-style-type: none"> Encourage the council's supply chain sector to engage on low carbon techniques 	✓✓
			<ul style="list-style-type: none"> Consider providing Local Authority-wide low carbon infrastructure, e.g. low carbon street lamps 	✓✓
Environmental goods and services	<ul style="list-style-type: none"> Increase recycling sector for both metals and non-metals Provision of specialist advice to all sectors on low carbon Design of lower carbon motors/generators 	<ul style="list-style-type: none"> Development of technologies Incentives or regulation to encourage use Skills Lack of demonstration/pilot; Higher costs 	<ul style="list-style-type: none"> Develop centre of excellence for recycling practices 	✓
			<ul style="list-style-type: none"> Make recycling of wide range of waste products key target for public sector 	✓✓
			<ul style="list-style-type: none"> Apply for European funding for grants to undertake training and consultancy to assist with new low carbon product development 	✓
			<ul style="list-style-type: none"> Undertake publicity campaigns, seminars and breakfast meetings with local businesses to raise awareness of low carbon opportunities 	✓✓✓
			<ul style="list-style-type: none"> Incentivise low carbon energy production 	✓

Sector	Opportunities for Sector within Sub-region	Barriers to Success within Sub-region	Local Authority Intervention Measures to Overcome Barriers	Ease to implement*
			<ul style="list-style-type: none"> Support development of new technologies e.g. via procurement of high quality recycling services for area 	✓✓
			<ul style="list-style-type: none"> Engage with R&D sector on motors/generators 	✓✓
			<ul style="list-style-type: none"> Provide infrastructure development support. 	✓✓
			<ul style="list-style-type: none"> Review planning and land-use policies to ensure renewable energy and recycling is prioritised 	✓✓
			<ul style="list-style-type: none"> Support skills development 	✓✓
Manufacture of food and beverages	<ul style="list-style-type: none"> Commercial opportunity from use of wastes e.g. anaerobic digestion, composting Decarbonising current operations to reduce cost base for sector to increase efficiency Provision of low carbon products for consumers 	<ul style="list-style-type: none"> Lack of knowledge in sector Capital for infrastructure Demonstration projects Lack of awareness of carbon emissions related to food and beverage sector 	<ul style="list-style-type: none"> Consider development of Anaerobic Digestion plant in area for processing food waste 	✓✓
			<ul style="list-style-type: none"> Apply for European funding for grants to undertake training and consultancy to assist with new low carbon product development. 	✓
			<ul style="list-style-type: none"> Work with WRAP to assist companies use less packaging and NISP to encourage re-use of waste materials 	✓✓✓
			<ul style="list-style-type: none"> Encourage operators to get products footprinted using PAS2050 	✓✓✓
			<ul style="list-style-type: none"> Encourage companies to apply for Carbon Trust Standard 	✓✓✓
			<ul style="list-style-type: none"> Undertake publicity campaigns, seminars and breakfast meetings to raise awareness of opportunities 	✓✓✓
			<ul style="list-style-type: none"> Provide advice to sector 	✓✓✓

Sector	Opportunities for Sector within Sub-region	Barriers to Success within Sub-region	Local Authority Intervention Measures to Overcome Barriers	Ease to implement*
			• Provide access to capital funding	✓
			• Support development of local infrastructure	✓✓
			• Generate case studies for local businesses	✓✓✓

*Key: Ease to implement ✓ Hard to ✓✓✓ Easy

10. Opportunity & Regulatory Assessment

10.1 Opportunity Assessment

Each opportunity identified above has been assessed to determine the impact on jobs and how the particular opportunity supports meeting of carbon related drivers. For each Local Authority the relevance of the opportunity has been indicated. Relevance has been determined based on current employment in the sector, changes in employment in the sector, relevant specialisms and access to clusters in the area. The impact of each opportunity has then been assessed as either increasing, decreasing or stabilising job numbers within the area. Each opportunity has been assessed as to whether it would be beneficial to coordinate at a City Region based on the similarity of actions across the relevant Local Authorities, the scale of the opportunity and the likely ability to coordinate actions. Results for this are given in Table 10.1.

10.2 Key Drivers for Opportunities

Regulation is a key driver for the development of a LCE. As well as the high level UK Climate Change Act 2008 which sets long-term targets there are a range of regulations, financial incentives, initiatives and voluntary targets which aim to reduce carbon emissions. For each opportunity identified in the project, some of the key drivers specific to the opportunity have been identified in Table 10.2. In all cases the regulation or government initiatives support the opportunity being implemented. There are a substantial number of drivers which directly or indirectly underpin all opportunities; these include:

- UK Climate Change Programme
- UK Low Carbon Transition Plan
- Climate Change Act 2008
- Carbon Budgets Order, Carbon Accounting Regulations and associated legislation relating to carbon budgets
- EU Emissions Trading Schemes, Climate Change Levy and Climate Change Agreements
- Carbon Reduction Commitment Energy Efficiency Scheme (equivalent to a UK ETS)
- Low Carbon Industrial Strategy

It is worth noting that there are a variety of exemptions applicable for the various pieces of legislation but there may be instances whereby it may indirectly apply, e.g. CRC Energy Efficiency Scheme applies directly to larger organisations but may impact the supply chains, etc., resulting in an indirect impact upon SMEs.

Table 10.1 - Opportunity Assessment for Wolverhampton and City Region

Sector	Opportunity	Wolverhampton		City	
		Relevance	Impact	Relevance	Impact
Construction	• Low carbon design and construction for buildings e.g. BREEAM certified buildings for non-domestic sector	✓	↑	✓	H
	• Use of low carbon design for civil engineering e.g. CEEQUAL civil engineering projects	✓	↔	✓	H
	• Reuse of materials and use of recycled materials (also supports recycling sector)	✓	↔		
	• Low carbon renovation of LA council stock and wider city housing	✓	↑	✓	H
	• Use of low carbon materials and equipment	✓	↔		
Manufacture of automotive and transport equipment	• Low carbon vehicle design (e.g. Hybrid and electric vehicles; fuel cell; innovative propulsion; new mobility concepts; thermo-electric generation; re-engineered internal combustion engine; brake energy regeneration; lightweight construction; efficient engine technologies; energy and heat management in the vehicle; recyclable vehicles; Intelligent Navigation Systems).	✓	↔	✓	H
Manufacture of non-metallic mineral goods	• Use and development of low carbon products	✓	↔	✓	M
	• Cost savings by use of more efficient (and low carbon) vehicles and equipment e.g. glass shaping machinery	✓	↔	✓	L
Public services	• Ability to procure low carbon services/products for the sector	✓	↑	✓	H
	• "Low Carbon" Education	✓	↑	✓	H
	• Use of planning to support development of LCE (transport, energy, waste management, etc)	✓	↑	✓	H
Manufacture of metals and fabricated metal products and electrical equipment	• Low carbon processes	✓	↑	✓	L
	• Production of equipment for low carbon energy systems and vehicles, e.g. CHP Network development; Clean Coal, Carbon Capture & Sequestration; Biomass plant; Wind power; Marine Energy; Smart metering; Intelligent grid management; Energy efficient equipment – industrial motors, domestic heating	✓	↑	✓	M
Transport, storage and communications	• Sustainable logistics for inbound and outbound distribution transports and increasing use of rail freight	✓	↑	✓	M
	• Development/use of alternative fuels and associated infrastructure (e.g. biofuels, hydrogen produced free of CO ₂)	✓	↑	✓	H

Sector	Opportunity	Wolverhampton		City	
		Relevance	Impact	Relevance	Impact
	<ul style="list-style-type: none"> Use of low carbon vehicles and premises 	✓	↔	✓	L
Environmental goods and services	<ul style="list-style-type: none"> Increase of non-metal waste recycling 	✓	↑	✓	M
	<ul style="list-style-type: none"> Provision of specialist advice to all sectors on low carbon 	✓	↔	✓	M
	<ul style="list-style-type: none"> Continued establishment of metal waste and scrap sector 	✓	↑	✓	M
	<ul style="list-style-type: none"> Development of electric motors/generators 	✓	↑		
	<ul style="list-style-type: none"> Development of low carbon community energy companies/schemes 	✓	↑	✓	H
Manufacture of food and beverages	<ul style="list-style-type: none"> Commercial opportunity from use of food wastes from large population 	✓	↑	✓	L
	<ul style="list-style-type: none"> Decarbonisation of processes to retain cost effectiveness. E.g. Increased recycling of packaging from food and drink products 	✓	↔	✓	L

Impact on jobs:

↑ Likely to lead to an increase in jobs

↔ Likely to help stabilise job numbers

Table 10.2 - City Region Wide Opportunities and Regulatory Impact Assessment for Opportunities

Sector	Opportunity	Key Drivers
Construction	<ul style="list-style-type: none"> Low carbon design and construction for non-domestic buildings e.g. BREEAM certified buildings for non-domestic sector 	<ul style="list-style-type: none"> Building Schools for the Future 2016 Zero Carbon Homes Building Regulations (Part L) Sustainable Construction Strategy Specific projects from the Environmental Transformation Fund (e.g. Low Carbon Buildings Programme) Energy Performance Certificates
	<ul style="list-style-type: none"> Low carbon design for civil engineering e.g. CEEQUAL civil engineering projects 	<ul style="list-style-type: none"> Sustainable Construction Strategy Specific projects from the Environmental Transformation Fund (e.g. Bio-energy Capital Grants and Bio-energy Infrastructure Schemes)
	<ul style="list-style-type: none"> Material reuse and recycling (also supports recycling sector) 	<ul style="list-style-type: none"> Waste Strategy for England Landfill Directive, Waste Framework Directive and other specific waste legislation (e.g. end-of-life vehicles, WEEE, etc.)
	<ul style="list-style-type: none"> Low carbon renovation of LA council stock and wider city housing 	<ul style="list-style-type: none"> Decent Homes Programme Code for Sustainable Homes Home Energy Saving Programme Community Energy Saving Programme Local Authority National Indicators (as appropriate)
	<ul style="list-style-type: none"> Provision of low carbon services and trades e.g. plumbing, insulation, electrics 	This opportunity supports the overall commitment to a LCE and help reduce the carbon emissions of organisations, businesses, etc.
	<ul style="list-style-type: none"> Provision of low carbon equipment 	This opportunity supports the overall commitment to a LCE and help reduce the carbon emissions of organisations, businesses, etc.
	<ul style="list-style-type: none"> Off-site construction of buildings 	<ul style="list-style-type: none"> Sustainable Construction Strategy Building Regulations (Part L)
	<ul style="list-style-type: none"> Use of low carbon materials and equipment 	This opportunity supports the overall commitment to a LCE and help reduce the carbon emissions of organisations, businesses, etc.
Manufacture of automotive and transport equipment	<ul style="list-style-type: none"> Manufacturing of low carbon transport equipment (including supply chain) 	<ul style="list-style-type: none"> Low Carbon Transport Innovation Strategy Low Carbon Economic Area Strategy for Developing Carbon Abatement Technologies for Fossil Fuel Use
	<ul style="list-style-type: none"> Low carbon vehicle design (e.g. Hybrid and electric) 	<ul style="list-style-type: none"> Vehicle Excise Duty

Sector	Opportunity	Key Drivers
	vehicles; fuel cell; innovative propulsion; new mobility concepts; thermo-electric generation; re-engineered internal combustion engine; brake energy regeneration; lightweight construction; efficient engine technologies; energy and heat management in the vehicle; recyclable vehicles; Intelligent Navigation Systems).	<ul style="list-style-type: none"> • Passenger Car Regulations • Low Carbon Transport: A Greener Future – A Carbon Reduction Strategy for Transport • Low Carbon Transport Innovation Strategy • Low Carbon Economic Area • Ultra-Low Carbon Vehicles in the UK Vision Document
	<ul style="list-style-type: none"> • Development of renewable energy, alternative fuels and associated infrastructure (e.g. biofuels, hydrogen produced free of CO₂) 	<ul style="list-style-type: none"> • Renewable Transport Fuel Obligation Renewables Obligation Order • Energy white paper 2007: 'Meeting the energy challenge' • Renewable Energy Strategy • Specific projects from the Environmental Transformation Fund (e.g. Bio-energy Capital Grants and Bio-energy Infrastructure Schemes)
Manufacture of non-metallic mineral goods	<ul style="list-style-type: none"> • Low carbon design, construction methods and materials 	<ul style="list-style-type: none"> • Building Schools for the Future • 2016 Zero Carbon Homes • Building Regulations (Part L) • Sustainable Construction Strategy • Specific projects from the Environmental Transformation Fund (e.g. Low Carbon Buildings Programme) • Energy Performance Certificates
	<ul style="list-style-type: none"> • Cost savings by use of more efficient (and low carbon) vehicles and equipment e.g. glass shaping machinery 	<ul style="list-style-type: none"> • Vehicle Excise Duty • Passenger Car Regulations • Low Carbon Transport: A Greener Future – A Carbon Reduction Strategy for Transport • Low Carbon Transport Innovation Strategy • Low Carbon Economic Area • Ultra-Low Carbon Vehicles in the UK Vision Document
	<ul style="list-style-type: none"> • Use and development of low carbon processes, products, services, trades 	<ul style="list-style-type: none"> • Specific projects from the Environmental Transformation Fund (e.g. Carbon Trust's innovation programme and funding for new low-carbon technology enterprises)
Public services	<ul style="list-style-type: none"> • Ability to procure low carbon services/products for the sector 	<ul style="list-style-type: none"> • Specific projects from the Environmental Transformation Fund (e.g. Carbon Trust's innovation programme and funding for new low-carbon technology enterprises) • Local Authority National Indicators (as appropriate)
	<ul style="list-style-type: none"> • "Low Carbon" Education 	This opportunity supports the overall commitment to a LCE and help reduce the carbon emissions of organisations, businesses, etc.
	<ul style="list-style-type: none"> • Use of planning to support development of LCE (transport, 	Although national legislation applies, this is more relevant on a local level and is influenced by the

Sector	Opportunity	Key Drivers
	energy, waste management, etc)	following: <ul style="list-style-type: none"> Black Country Joint Core Strategy Regional Spatial Strategy Local Development Framework
	<ul style="list-style-type: none"> Defence sector support/advice to reduce carbon emissions 	<ul style="list-style-type: none"> Supports Defence sector meeting government targets This opportunity supports the overall commitment to a LCE and help reduce the carbon emissions of organisations, businesses, etc.
Manufacture of metals and fabricated metal products and electrical equipment	<ul style="list-style-type: none"> Low carbon processes 	<ul style="list-style-type: none"> Specific projects from the Environmental Transformation Fund (e.g. Carbon Trust's innovation programme and funding for new low-carbon technology enterprises)
	<ul style="list-style-type: none"> Production of equipment for low carbon energy systems and vehicles, e.g. CHP Network development; Clean Coal, Carbon Capture & Sequestration; Biomass plant; Wind power; Marine Energy; Smart metering; Intelligent grid management; Energy efficient equipment – industrial motors, domestic heating 	<ul style="list-style-type: none"> Energy white paper 2007: 'Meeting the energy challenge' Renewable Energy Strategy Renewable Transport Fuel Obligation Renewables Obligation Order
Transport, storage and communications	<ul style="list-style-type: none"> Sustainable logistics 	<ul style="list-style-type: none"> Low Carbon Transport: A Greener Future – A Carbon Reduction Strategy for Transport Low Carbon Transport Innovation Strategy
	<ul style="list-style-type: none"> Shared loading for cargo 	<ul style="list-style-type: none"> Vehicle Road Tax Low Carbon Transport: A Greener Future – A Carbon Reduction Strategy for Transport Low Carbon Transport Innovation Strategy
	<ul style="list-style-type: none"> Development/use of alternative fuels and associated infrastructure (e.g. biofuels, hydrogen produced free of CO₂) 	<ul style="list-style-type: none"> Energy white paper 2007: 'Meeting the energy challenge' Renewable Energy Strategy
	<ul style="list-style-type: none"> Low carbon travel services 	<ul style="list-style-type: none"> Low Carbon Transport: A Greener Future – A Carbon Reduction Strategy for Transport
	<ul style="list-style-type: none"> Use of low carbon vehicles and premises 	
Environmental goods and services	<ul style="list-style-type: none"> Increase of non-metal waste recycling 	<ul style="list-style-type: none"> Waste Strategy for England 2007 Landfill Directive, Waste Framework Directive and other specific waste legislation (e.g. Producer Responsibility Obligations (Packaging Waste) Regulations, etc.)
	<ul style="list-style-type: none"> Provision of specialist advice to all sectors on low carbon 	This opportunity supports the overall commitment to a LCE and help reduce the carbon emissions of organisations, businesses, etc.
	<ul style="list-style-type: none"> Continued establishment of metal waste and scrap sector 	<ul style="list-style-type: none"> Waste Strategy for England 2007 Landfill Directive, Waste Framework Directive and other specific waste legislation (e.g. Producer Responsibility Obligations (Packaging Waste) Regulations, etc.)

Sector	Opportunity	Key Drivers
	<ul style="list-style-type: none"> Development of electric motors/generators 	<ul style="list-style-type: none"> Passenger Car Regulations Low Carbon Transport: A Greener Future – A Carbon Reduction Strategy for Transport Low Carbon Transport Innovation Strategy Low Carbon Economic Area Ultra-Low Carbon Vehicles in the UK Vision Document
	<ul style="list-style-type: none"> Development of low carbon community energy companies/schemes (both within and outside area) 	<ul style="list-style-type: none"> Community Energy Saving Programme Low Carbon Transition Plan objective to get 40% of electricity from low carbon sources by 2020
Manufacture of food and beverages	<ul style="list-style-type: none"> Commercial opportunity from use of food wastes from large population 	<ul style="list-style-type: none"> Energy white paper 2007: 'Meeting the energy challenge' Renewable Energy Strategy
	<ul style="list-style-type: none"> Increased recycling of packaging from food and drink products, for example aluminium and glass bottles. 	<ul style="list-style-type: none"> Waste Strategy for England 2007 Landfill Directive, Waste Framework Directive and other specific waste legislation (e.g. Producer Responsibility Obligations (Packaging Waste) Regulations, etc.)
	<ul style="list-style-type: none"> Decarbonisation of processes to retain cost effectiveness. E.g. Increased recycling of packaging from food and drink products 	<p>This opportunity supports the overall commitment to a LCE and help reduce the carbon emissions of organisations, businesses, etc.</p>
	<ul style="list-style-type: none"> Low carbon products 	<ul style="list-style-type: none"> Specific projects from the Environmental Transition Fund (e.g. Low Carbon Buildings Programme)

11. Summary

The highest employment areas within the eight key sectors of low carbon opportunity within Wolverhampton were identified as public services; manufacture of metals, fabricated metal products and electrical equipment; transport, storage and communications, and; construction. Increases in employment were seen in motor vehicles and transport, manufacture of non-metallic mineral goods, public services and transport, storage and communications and decreases in employment were seen in environmental goods and services, farming, food and drink, manufacture of metals and construction. Wolverhampton has access to a number of clusters, such as the University of Wolverhampton and the Knowledge Transfer Partnership, Wolverhampton Homes and the Environmental Partnership. Based on the ranking exercise key opportunities for Wolverhampton were found to be manufacture of materials and fabricated metal products; construction and; manufacture of motor vehicles and transport. Opportunities which have been assessed as having the potential to increase jobs included:

- Construction: low carbon design and construction of buildings; low carbon renovation of housing stock;
- Metal Manufacturing: the production of equipment for low carbon energy systems and vehicles in the metal manufacturing sector; low carbon processes
- Transport, Storage and Communications: Competitive advantage via sustainable logistics and use of rail freight; development/use of alternative fuels and associated infrastructure
- Environmental Goods & Services: Increased non-metal waste recycling; Continued establishment of metal waste and scrap sector; Development of electric motors/generators; Development of low carbon community energy companies
- Manufacture of food and beverages: Commercial opportunity from use of food wastes from large population.

Low carbon procurement, the provision of low carbon education and planning to support the LCE development were all considered to be important public sector opportunities.

Barriers were seen to include a lack of awareness of LCE and access to skills.