West Midlands Sustainability Priorities to deliver the Low Carbon Vision 2020

Sustainability West Midlands
February 2011

www.advantagewm.co.uk

FOREWORD

Our report 'The low carbon vision for the West Midlands in 2020' provides a realistic and attractive destination, but how do we get there? We want to guide investment to deliver the best value for money outcomes, in terms of jobs, carbon reduction, and social benefits. What are the priorities? Even if you can answer these questions, who is going to lead on what?

These were some of the fundamental questions that this report set out to address. Subsequently during the final phases of this work in the summer of 2010 a change in Government means that many of the potential structures that could lead on the identified priorities are being phased out. We believe this report still has a vital role to play informing 'sub-national' policy in the West Midlands. The priorities and analysis are still valid, and clarity on the delivery structures is still needed, especially in realising economies of scale and action across local authority boundaries and emerging local enterprise partnerships.

We will continue to use these priorities in shaping our sustainability policy advice to leaders in the West Midlands, cross-sector events with our members to develop solutions, and sharing good practice.

Thanks to all those who have contributed to this project, especially our associates Stephen Owen, and Peter Woodward, our Board, the steering group and the many consultees and participants within the workshops we ran. Now let us use this knowledge to help drive the agenda.

Dr Simon Slater, Sustainability West Midlands, February 2011.

Report information

Title: West Midlands Sustainability Priorities to deliver the Low Carbon Vision 2020
Version: Final, February 2011
Client: Defra
Funders: Defra, Advantage West Midlands, Sustainability West Midlands (SWM) with technical input from the West Midlands Regional Observatory.
Project Manager: Dr Simon Slater, SWM
Project Contributors: Stephen Owen SWM associate and Ursus Consulting Ltd undertook the majority of the research, with support from Peter Woodward, SWM associate. Steering group include Chris Blakley, Rebecca Gill, Tim Baldwin, and Sharon Palmer. Report checked by Laura Simpson, SWM.
Disclaimer: This report represents the independent advice commissioned by Sustainability West Midlands, and not necessarily that of the funders.
Copyright: This report may be freely distributed and used for public benefit and non-commercial use. If information is used from this report it must reference the source which is "West Midlands Sustainability Priorities to deliver the Low Carbon Vision 2020, Sustainability West Midlands, February 2011."

About Sustainability West Midlands

We are the sustainability adviser for the leaders of the West Midlands. We are also the sustainability champion body for the West Midlands, designated by government. We are a not-for-profit company that works with our members in the business, public and voluntary sectors. Our Board is private sector led and has cross-sector representation; they are supported by our team of staff and associates.

Our vision is that by 2020 businesses and communities are thriving in a West Midlands that is environmentally sustainable and socially just. By 2012 our leaders are clear on what this looks like, have set milestones, and their organisations are making strong progress.

Our role is to act as a catalyst for change through our advice to leaders, to develop practical solutions with our members and share success through our communications.

Contents

1 INTRODUCTION

1.1 AIMS

This work was commissioned by the Sustainability West Midlands (SWM) Board, with support from Defra and Advantage West Midlands, in January 2010 and aims to help:

- provide the key milestones against which progress can be measured towards achieving *The low carbon vision for the West Midlands in 2020*, based on the current baseline and activity;
- prioritise actions which will help to deliver these milestones and Vision 2020, taking into account factors such as costs, ease of implementation, carbon and jobs benefits;
- identify where clearer or more supported leadership and partnership working is required to deliver the actions needed to make progress towards Vision 2020; and
- provide SWM with an agenda to help inform policy and action.

1.2 BACKGROUND

In 2009, SWM published *A Low-Carbon Vision for the West Midlands in 2020*, prepared by Forum for the Future. This provides an aspirational vision of how the West Midlands might look in 2020 as a successful leader in the low carbon economy, and covers themes such as:

- low carbon energy supply
- low carbon housing, buildings and regeneration
- low carbon transport
- resource efficiency and low carbon waste management
- climate change adaptation
- development of low carbon businesses and jobs

To achieve the Vision 2020, SWM has identified the need to establish a baseline of the West Midlands' current performance and to identify the steps required to make progress towards the Vision 2020. Defra and Advantage West Midlands funding has supported this policy work and helped SWM to work with partners to develop a more manageable number of sustainable development (SD) priorities, compared with the current 40 priorities in the Regional Sustainability Framework.

During SWM's scoping work for the study, it became apparent that it is not just SD policy priorities that need examining, but also partnerships and delivery. The study has therefore also identified partnerships for taking forward priority actions for moving towards the Low Carbon Vision.

The scope of the work does not seek to address the whole spectrum of sustainable development. Instead it focuses on key themes to deliver a low carbon economy as set out in Vision 2020 above.

1.3 METHODOLOGY

The methodology used for identifying priority areas for action and partnerships to assist delivery of these actions has involved the following steps:

Selecting the Priority Areas:

- A long list of potential priority areas for action was drawn up, based upon the Low Carbon Vision 2020, a review of the baseline situation, strategic West Midlands' documents and stakeholder

discussions. This list is shown in *Annex A.* Analysis of the baseline situation is summarised in *Annex C*.

- To identify priority areas for action, the list was assessed against the following criteria:
  - Achieving significant and cost-effective carbon emission reductions ('carbon bangs per buck').
  - Closing the West Midlands' productivity gap – creating employment, reducing worklessness and increasing business efficiency.
  - Making the West Midlands more resilient for the future – proofing against peak oil, recession and climate change impacts.
  - Closing the West Midlands' quality of life gap – reducing poverty, health inequality and improving access to opportunity and services.
  - Areas where change can be most easily achieved ('low hanging fruit').
  - Areas where the solutions are well understood and proven.
  - Areas requiring the least public investment or offering the best value for money.
  - Areas where regional/sub regional interventions would generate greatest added value.

- The highest scoring areas (shown in *Annex A*) were then further prioritised by participants at a workshop on 30th March 2010. This resulted in the identification of 7 priority areas for action, which are all equally important:

  1. **Retrofitting existing housing stock and buildings.**
  2. **District energy networks for regeneration areas.**
  3. **Public Sector Sustainable Procurement.**
  4. **Strategic approach to low carbon transport** – developing Smarter Travel Choices.
  5. **Landfill diversion infrastructure.**
  6. **Environmental infrastructure -** protecting and enhancing natural assets, increasing resilience to climate change and addressing worklessness.
  7. **Development of green jobs** – green and low carbon skills.

  Developing leadership to encourage action and behaviour change was identified as a cross-cutting theme across many of the above priorities, including in relation to smarter travel choices, waste and energy efficiency.

Identifying Actions and Partnerships in the Priority Areas:

- At the workshop stakeholder views were also obtained on actions required to make progress in the priority areas. Following the workshop, further work and discussions with stakeholders were undertaken on the required actions and the partnerships needed to ensure that the actions are delivered and significant progress is made in the West Midlands. This also included testing the priorities at a regional Business Council for Sustainability workshop on the 12th May.

Section 2 summarises actions required to make progress in the priority areas and partnerships for taking actions forward.

2 ACTIONS AND PARTNERSHIPS IN THE PRIORITY AREAS

Priority Areas for making progress towards the West Midlands Low Carbon Vision 2020

- **2.1 Retrofitting existing housing stock and buildings.**
- **2.2 District energy networks for regeneration areas.**
- **2.3 Public Sector Sustainable Procurement.**
- **2.4 Strategic approach to low carbon transport** – developing Smarter Travel Choices.
- **2.5 Landfill diversion infrastructure.**
- **2.6 Environmental infrastructure** to protect and enhance natural assets, increase resilience to climate change and address worklessness.
- **2.7 Development of green jobs** – green and low carbon skills.

2.1 RETROFITTING EXISTING HOUSING STOCK AND BUILDINGS

2.1.1 Where do we want to be in 2020?

The June 2010 budget has confirmed that a Green Deal to retrofit some 7 million houses nationally is a key priority for the new government. Current national targets are for an 80% reduction in carbon emissions by 2050 and for all homes to be Zero Carbon - Code Sustainable Homes (CSH) Level 6 - by 2016. The West Midland's Sustainable Housing Partnership (SHAP) aspires to even more challenging targets: an 80% reduction in CO_2 by 2025 and CSH Level 6 for all new homes from 2010 onwards. The low carbon Regional Economic Strategy (RES) is expected to help deliver this through a focus on: efficient buildings; promoting the use of best available technologies in the building stock; supporting the sustainable construction industry by developing skills; and stimulating demand and strengthening the supply chain.

2.1.2 Where are we now?

The West Midlands' domestic sector – with 2.3 million homes – consumes 49,425 GWh (equivalent to 13.14 mtCO_2 in 2006) – 34% of total West Midlands consumption. The CO_2 trajectory to 2026 is downwards and lower carbon build standards for new construction will help to reduce average energy efficiency of the building stock.

The West Midlands is taking a leading role in developing low carbon approaches to new buildings, particularly for social housing. Recent work by Encraft (published May 2010) suggests that the West Midlands already has 150-200 low carbon buildings in place or planned. However, new build alone will not be enough to achieve government targets, let alone the ambitions of the low carbon vision since 80% of the West Midlands' 2050 building stock is already in place and most of it is of low energy efficiency. Local Authorities, Housing Associations and national surveys show that average SAP[1] ratings in 2008 for owner occupied or privately rented dwellings was only 54 which is the equivalent to Energy Performance Certificate (EPC) band E. This applies to 80% of the housing stock.

By comparison the energy efficiency of the social housing stock – accounting for 20% of the total – is on average rather better (average SAP 67) largely as a result of the work of the Registered Social

(1) SAP stands for Standard Assessment Procedure, also known as Energy Ratings. Houses are rated from 0 - 100, 0 being very inefficient and 100 being highly efficient.

Landlords using Decent Homes monies. An estimated 64% of the social stock had been retrofitted between 2006-8, particularly in the Central Housing Market Area around Birmingham and the Black Country.

However, baseline estimates suggest that between 2006-8 private sector refurbishment rates were only 4-4.5% per annum (pa) and may have dropped even lower during the recession. An estimated 70% of suitable properties still need further loft insulation and 100% of suitable properties require solid wall insulation. The costs could be considerable but could lead to savings of 11,200 GWh of energy and 2.2 million tcpa of carbon.

A significant number of home (and building) retrofit initiatives are being planned or have recently been launched nationally. However, in order to meet the widely agreed target of 80,000 homes retrofitted per year in the West Midlands there are some considerable challenges which need to be overcome:

- The costs for retrofitting on this scale have been estimated at more than £3bn – in the context of very tight public spending budgets much of this will need to come from the private sector.
- Decent Homes Funding for improvements to social housing finishes in 2010 with no obvious successor.
- Retrofit schemes being implemented by national partners – such as British Gas – are focused on social housing.
- Area based schemes have generally been piecemeal and uncoordinated
- Opportunities for wider benefits such as local skills, jobs and supply chain opportunities are being missed.

There was, therefore, overwhelming support at the workshop for retrofitting of existing housing as a priority activity. This view also emerged from the Regional Low Carbon Task Force (2010) led by Professor Julia King.

2.1.3 What needs to be done to develop these initiatives further?

By ensuring a coordinated approach across the West Midlands - including social housing, housing growth point areas and Impact Investment Locations - the West Midlands can develop the critical mass to strengthen existing building materials supply chains and position suppliers to compete internationally in this growing market for sustainable building technologies.

The Regional Low Carbon Task force estimated that a large scale area based programme could:

- Create 630 skilled jobs in pilot projects, and thousands more as initiatives are rolled out;
- Position the West Midlands to exploit a £390bn market for sustainable building technologies;
- Deliver savings of 22,000 tonnes of carbon from retrofitted homes;
- Deliver wider social benefits: fuel poverty could be reduced by achieving energy saving costs of £10million in targeted areas. This would also deliver health and quality of life benefits, particularly in deprived areas;
- Incorporate high speed broadband access in all refurbished homes;
- Strengthen the West Midlands' supply chain for retrofit technologies; and
- Capture new business opportunities and develop new business models.

Phase 1 (2010-13): 4-5 Large Scale Low Carbon Neighbourhood Pilots - A first stage of a large scale pilot would involve research and development and delivery of 4-5 large scale pilots with selected Local Authorities to cover a range of housing types, tenures and densities (including those suitable for cavity wall insulation and hard to treat solid wall properties). Adding a rural location to the city projects could open additional funding opportunities. These pilots will deliver tangible benefits and also generate lessons for a successful model which could be rolled out across the West Midlands in *Phase 2*.

Months 1-6 - A short research programme to:

- Increase understanding of what other countries, regions and parts of the West Midlands are doing and the transferable lessons. Lessons will include: how to sell the scheme to leaders; how to align local authority (LA) funding with that from other sources; how to sell schemes to the public and maximise uptake; how to work with contractors to maximise economies of scale; and how to ensure that local skills and opportunities for local supply chains are maximised.
- Identify and test solutions for 'Hard to Treat' housing.
- Develop a menu of funding options to suit owner occupiers, landlords and tenants, different housing types and different levels of retrofit (from basic insulation to renewables) including pay-as-you-save schemes being discussed with utilities and high street retailers at national level.
- Identify 4-5 Local Authorities that are keen and ready to get involved, probably drawn from those with some existing experience. Work with partners (such as the West Midlands Centre for Constructing Excellence - WMCCE, the Sustainable Building Centre and local manufacturers) to raise their awareness of forthcoming supply chain opportunities (e.g. for different renewable technologies and insulation products and to build local skills across the retrofit spectrum.
- Develop a programme for encouraging behaviour change amongst home owners and occupiers to encourage high rates of uptake of retrofit measures, building on the lessons from successful programmes elsewhere.

In parallel design and start to deliver 3 year volume pilots in the 4-5 selected areas to agreed common standards:

- Increasing housing energy efficiency ratings to at least EPC B/C.
- Integrating flood risk reduction measures (such as raising electrical circuits in flood risk zones) and incorporating renewables technologies or district heating where applicable.
- Promoting schemes on the basis of wider benefits – reducing energy bills, health, fuel poverty, worklessness and skills, low carbon economy and cost savings – rather than just CO_2 savings. Each large volume pilot will need to retrofit at least 1000 dwellings/ businesses pa (ie. 12-15,000 over the 3 year pilot).
- Provide participating local authorities with support to prepare tender documents including sustainable procurement clauses to encourage local firms, local labour and skills development.
- Joint working with utility companies – E-ON, Npower etc – on smart metering.

Phase 2: Roll out so that all Local Authorities have a volume scheme

After 2013 the results of the pilots will be evaluated and, based on the lessons learnt, a model(s) for large scale area based schemes will be rolled out to every LA area in the West Midlands.

2.1.4 Partnerships for taking actions forward:

The Retrofitting Housing Steering Group is at the very early stages of development. Its first meeting was at the end of April 2010. Members of the Steering group include SHAP, Homes and Communities Agency (HCA), Government Office (GOWM), Advantage West Midlands (AWM), Contractors, the Registered Social Landlord (RSL) M6 Group (Accord), the Regional Skills Partnership, National Housing Federation (NHF) and the Department for Energy and Climate Change (DECC). The steering group is supported by the HCA Project Team and reports into the Regional Task Force and HCA Policy Development Directorate (nationally). This may become an HCA blueprint for other regions. The steering group is well resourced for the first year drawing on SHAP's committed budget of £100k for 2010/11. Its year 1 programme will focus on:

- Identifying the infrastructure needed in the West Midlands to deliver retrofitting, including expertise required.
- Funding mechanisms and organisations that can support the work (building on work by SWM and WMCCE for the City Region Low Carbon Leadership Programme and SHAP work).
- Skills for delivery and creating local supply chain opportunities will be cross-cutting themes. The steering group will also need to set up a framework for measuring achievements.

In order to make sure that coordinated large scale activity happens on the ground the group will probably need to evolve into a standalone partnership or move into an organisation such as SHAP or HCA with guaranteed core funding.

Post May 2010 - The HCA have continued to work with SHAP and partners to drive this agenda.

2.2 DISTRICT ENERGY NETWORKS FOR REGENERATION

2.2.1 Where do we want to be in 2020?

During 2009 the national renewable target was raised to a requirement for 15% of national energy consumption by 2020 to come from renewables. This represents a required increase of over 21,000 GWh generated in the West Midlands by 2020 from the current 2020 target of 1,700 GWh. This is an extremely ambitious challenge and will require a wide range of interventions to increase capacity.

The West Midlands Low Carbon Task Force (2010) identified the need for a 'smart grid' bringing together distributed generation technologies (Waste to Wealth), advanced electricity networks, home energy management systems, electric transport and potentially, heat networks. This would enable West Midlands businesses to design and manufacture energy architecture and associated services and position them to develop world-leading capabilities to take advantage of growing global low carbon markets.

2.2.2 Where are we now?

Current (2010) installed decentralised and renewable capacity in the West Midlands delivers 1,422 GWh. This will need to be increased fifteen-fold to meet the national target. Combined Heat and Power (CHP) is growing slowly but steadily with a district heating scheme in Birmingham (see Box 1) and smaller CHP schemes in Nuneaton and Bedworth and Warwickshire and Worcestershire County Councils with biomass powered CHP schemes in some public buildings.

Local Authorities such as Birmingham City have demonstrated that setting up decentralised energy networks operated by locally co-run Energy Service Companies (ESCOs) can deliver significant carbon savings as well as economic benefits. However, decentralised energy networks involve multi-million pound investment and are technically and financially complex to develop and implement. The process involves detailed technical feasibility studies and business planning and bringing together a range of partners. Implementation needs to be carefully planned with community involvement to manage disruption during the construction period and ensure integration with other infrastructure development.

AWM currently provides this type of technical and economic planning support to help steering groups bring forward schemes of varying sizes and energy technologies in seven localities: Hereford (Edgar Street Grid); Coventry City Centre; Birmingham Eastside; Longbridge; Stoke City Centre; I54 Wolverhampton; and Bilston Urban Village). However, much more activity – with Local Authorities leading from the front – will be needed to meet the 2020 targets.

Box 1. Birmingham District Energy Company Ltd (BDEC)

Birmingham City Council (BCC) is developing its Climate Change Strategy and Action Plan with the aim of cutting CO_2 emissions by 60% by 2025. This is an ambitious aim, and the effective delivery of decentralised district energy schemes across the whole city will be one of the key mechanisms to achieve this. BCC has been planning for construction of city centre schemes since 2003 and after a competitive procurement process selected Utilicom Ltd to design, build, finance, own and operate sustainable district energy scheme across Birmingham. BCC signed the first 25 year energy supply agreement in December 2006.

This is being delivered through the Birmingham District Energy Company – an Utilicom owned Energy Services Company (ESCO) operated in partnership with Birmingham City Council. BEDC has set up a large commercial district energy scheme featuring tri-generation – the production of heat, electricity and chilled water – in Broad Street. The scheme is initially based around the International Convention Centre (ICC) heating and cooling plant into which BEDC has installed a 1.5 MW CHP unit (3 MW heat). The £6 million works were funded by Utilicom Ltd, together with a capital grant from Defra's Community Energy Program. Initially the scheme supplies the ICC and the National Indoor Arena and several other city centre buildings including the Council House and Extension, Paradise Circus, the Town Hall, the Repertory Theatre and the Hyatt Hotel. Initial annual CO_2 emissions reductions are estimated at 2,800 tonnes – but this could increase to 4,000 tcpa as renewable sources and additional customers are added. Building owners will be able to save 5% pa on their energy costs on a Whole Life Cost basis.

BDEC is also working to develop schemes in the Eastside Regeneration Area comprising Birmingham Children's Hospital, Aston University, council administrative buildings. Ultimately the plan is to link the schemes together. This could save a further 6000 tonnes of carbon a year. Extension to new energy consumers and use of renewables could result in overall savings of 20,000 tcpa.

Nuneaton & Bedworth Borough Council: Replaced seven gas-fired boilers and two gas-fired water heaters, originally installed in the 1980s, with an integrated CHP system and a mini-CHP system which operates as the lead boiler for both heating and hot water. As well as generating 12.5kW of heat, it also produces 5.5kW of electricity suitable for the town hall's base load power demand. The complete package offers a total of 612kW of energy. http://www.nuneatonandbedworth.gov.uk

AWM is also working to develop Smart Grid Opportunities. The Birmingham Smart Grid will provide a platform to demonstrate the value of new technology and solutions that will facilitate sustainable, low-carbon living and working in the 21st Century. The project will be focussed around the Impact Investment Locations where local regeneration investments are being planned and could help to position the electrical architecture businesses of the West Midlands to address this global market,

potentially creating thousands of jobs in the supply chain and developing new, high value technologies. AWM is in early stage discussions with E-ON Central Networks and Birmingham City Council to test smart grid technology at Longbridge as part of a wider Birmingham Decentralised energy network. The next step is to develop an innovative, coordinated, West Midlands bid to win OFGEM demonstration funding in September 2010.

2.2.3 What needs to be done to develop these initiatives further?

In order to further increase decentralised and renewable energy generation the West Midlands requires:

- visionary leadership in regeneration and housing schemes to identify opportunities;
- supportive planning frameworks such as the Supplementary Planning Guidance being developed for Birmingham City Council;
- Joint working and dissemination of best practice across all Local Authorities and sharing experience between Local Authorities to develop low carbon energy schemes; and
- Encouraging a dynamic business sector based on new energy technologies and services.

Phase 1 (6-9 months)

- **Champions** - Appoint a West Midlands champion(s) to push CHP at strategic and local authority leaders' levels. This might include a champion on the Joint Investment Strategic Board, West Midlands infrastructure-related fora and the SWM Board.
- **CHP information** - Develop materials / tools which demonstrate why decentralised energy is so important for the West Midlands and how decentralised energy networks could address issues for specific sites/districts in order to convince leaders of the benefits of decentralised energy networks. This would build on the lessons that have been learnt to date and options for implementation including ESCOs, public/ private partnerships and community energy schemes.
- **Communications** - A wide communications campaign to engage leaders and senior officers of all West Midlands Local Authorities, major energy users (hospitals, universities etc) and infrastructure developers. This could involve an awareness raising event or seminar for Leaders organised through Improvement and Efficiency West Midlands, AWM or SWM supported by carefully targeted marketing.
- **Working with all West Midlands Local Authorities** at officer level so that:
  - They understand how to commission a feasibility study (including applicable grants or financing mechanisms), how to procure a project, what will be involved during construction, operation and maintenance;
  - Each Local Authority has an Energy Strategy, heat maps and evidence to support feasibility studies on decentralised energy in place;
  - This informs master plans, core strategies and planning policies; and
  - Statutory planning powers are used to support district heating in regeneration areas and to secure decentralised energy delivery as part of regeneration schemes.

Phase 2 (9 months to 2 years)

- Support a selection of Local Authorities with the best opportunities for decentralised energy networks to:
  - Raise awareness and equip their Finance Directors and lawyers to negotiate contracts with partner organisations;
  - Appoint an internal project champion;
  - Use the Strategic approach above to focus on an Impact Investment Location (IIL) or locality with housing, buildings or industrial sites owned or controlled by the LA, RSLs or a major heat user such as a university.

- Provide technical and financial assistance to develop viable renewables supply chains (e.g. biomass from management of woodlands in the West Midlands).

2.2.4 Partnerships for taking actions forward

There is no existing West Midlands energy partnership to take forward the activities identified in this area. Local partners would be supportive of setting up a Renewable/Low Carbon Energy Infrastructure Advisory Group with a remit to deliver the above programme (and similar to the *Waste Infrastructure Advisory Group* – see *Section 2.5* below on Landfill Diversion). This group would:

- Bring together representatives from the WM Leaders Board, Utilities, ESCOs, property developers and large energy users (commercial and public sector). Secretariat services for the group could be provided through IEWM, SWM, AWM or a local enterprise.
- Report to the Joint Strategic Investment Board, WM Regional Task Force or AWM's Board.
- Establish a formal link/West Midlands hub arrangement with an organisation such as Decentralised Energy Knowledge Network (a national portal for information and advice) to provide West Midlands appropriate information, technical advice and best practice.
- Bring together a virtual network of advisors/practitioners from those involved in the steering groups for Impact Investment Locations (IILs). Members could share experience and mentor LA officers in other areas keen to investigate decentralised energy network opportunities.
- Apply for its own budget from the IEWM Climate Change skills programme for the general support of LA officers and leaders and GOWM.

Post May 2010 – There continues to be no clear sub-regional or West Midlands wide body leading on this agenda. SWM carried out development work for the now abolished West Midlands Climate Change Office. The results of this work were used by SWM to explore options with Birmingham City Council for an arms length low carbon agency, however current budget cuts make this unlikely.

2.3 PUBLIC SECTOR SUSTAINABLE PROCUREMENT

2.3.1 Where do we want to be in 2020?

By 2020, and indeed over the shorter term, all public sector bodies in the West Midlands will have embedded sustainable procurement good practice into their procurement processes to maximise the economic, social and environmental benefits of contracting and purchasing of products and services. This is particularly important in the context of public sector spending constraints.

2.3.2 Where are we now?

A range of activities are developing in the West Midlands to help secure the benefits of public sector sustainable procurement (see Box 2 below). These include: the *West Midlands Procurement Framework for Jobs and Skills* prepared by the West Midlands Economic Inclusion Panel, which focuses on promoting local training, job opportunities and reducing worklessness; local and sub-regional initiatives such as the *Birmingham Sustainable Procurement Compact* led by BeBirmingham; the recently formed West Midlands Sustainable Procurement Group for Local Authorities in Warwickshire; work by local authorities in Staffordshire and Shropshire to promote local economic benefits through procurement; and support activities on procurement provided by Improvement and Efficiency West Midlands (IEWM).

Box 2: Examples of existing activities to promote public sector sustainable procurement

There are a range of existing activities in the West Midlands to promote public sector sustainable procurement, including:

- *The West Midlands Procurement Framework for Jobs and Skills* prepared by the West Midlands Economic Inclusion Panel (with support from AWM and GOWM), signed up to by 22 organisations (including Local Authorities, the WM Leaders Board, the NHS Job Centre Plus, GOWM, AWM, the HCA and Unions), aims to use procurement to promote increased training and job opportunities for local people and to address worklessness.
- The *Birmingham Sustainable Procurement Compact* led by BeBirmingham and developed through the Localise West Midlands project, with support from the Environment Agency, to produce sustainable procurement action plans for partners, which include 15 Compact signatories such as Birmingham City Council, Birmingham and Aston Universities, Environment Agency, AWM, GOWM, NHS Trusts and the WM Fire Service.
- Improvement and Efficiency West Midlands (IEWM) activities to support cost savings and efficiency improvements through procurement, including information, guidance and training on sustainable procurement.
- The establishment of the West Midlands Sustainable Procurement Group for Local Authorities in Warwickshire led by Warwickshire County Council and linked to the West Midlands Strategic Procurement Group.
- Sub-regional initiatives such as the work by local authorities in Staffordshire to promote local economic benefits through procurement and Shropshire Council's *Increasing Efficiency from Grower to Eater* project on food procurement.
- Work by NHS Trusts in the West Midlands to promote sustainable procurement.

Although these initiatives are helping to build momentum on sustainable procurement, consultees report that the process of embedding sustainable procurement into procurement processes is still often at a relatively early stage. Furthermore, initiatives are fragmented and lack a joined up approach to ensuring high level commitment, sharing of guidance and good practice and demonstrating the benefits being generated.

2.3.3 What needs to be done to make future progress?

To help accelerate progress and maximise the benefits of public sector sustainable procurement in the West Midlands, consultees have identified the following priorities:

- The Joint Strategy and Investment Board (JSIB) and West Midlands Leaders Board should strongly endorse the need for all public sector bodies across the West Midlands to adopt high standards of sustainable procurement and sign up to appropriate local/sub-regional or West Midlands compacts.
- Chief Executives of all public sector bodies in the West Midlands should sign up to appropriate sustainable procurement compacts (based on models such as the *West Midlands Procurement Framework for Jobs and Skills* and the *Birmingham Sustainable Procurement Compact*).
- The JSIB should decide on whether initiatives are required at the West Midlands level if they can clearly add value to initiatives at the local/sub-regional level. For example, should the *West Midlands Procurement Framework for Jobs and Skills* - which has gained considerable traction and senior level commitment of many organisations - be extended from its current focus on jobs and skills, to other aspects of sustainable procurement such as reducing carbon emissions or promoting recycling?
- Partners should continue to develop sustainable procurement work and compacts at the local/sub-regional levels – for example, the *Birmingham Sustainable Procurement Compact*.

These initiatives should share good practice, standards and resources, such as guidance on contract clauses, including sharing with the potentially extended West Midlands Framework for Jobs and Skills.

- In applying sustainable procurement across the West Midlands, particular attention should focus on making the most of sustainable procurement opportunities in the areas of greatest spend, such as capital investment in Impact Investment Locations (IILS) and ongoing Local Authority budget items such as energy, transport and buildings.
- Systems will be needed for measuring the resulting social, economic and environmental benefits generated from sustainable procurement good practice.

2.3.4 Partnerships for taking actions forward:

- **West Midlands Compact** - If *the JSIB de*cides that a *West Midlands Sustainable Procurement Framework* model is required, e.g. by extending the existing *West Midlands Procurement Framework for Jobs and Skills,* then SWM could lead on its extension, working closely with the GOWM/AWM staff within the West Midlands Economic Inclusion Panel who prepared the Jobs and Skills framework. The extension to cover sustainable procurement aspects should be undertaken through a staged process, initially incorporating priority aspects of sustainable procurement (e.g. construction and buildings), rather than necessarily incorporating all additional aspects of sustainable procurement in one go.
- **Sub-Regional and Local Compacts –** Leadership on the development of local/sub-regional compacts on sustainable procurement would sit with the Local Strategic Partnerships and Local Authorities, supported by experts in the field such as from the Environment Agency and IEWM. It will clearly be important to ensure close working between the local/sub-regional initiatives to maximise sharing of good practice, materials, guidance and training resources (rather than different local/sub-regional compacts each developing similar materials). The JSIB should play a lead role to help achieve this joint working, potentially supported by SWM.
- **Impact Investment Locations** - SWM should also continue to support the JSIB in assisting the IILs to embed and generate the benefits of sustainable procurement.

Post May 2010 – SWM is working with IEWM and a number of local authorities to share good practice. However the demise of the JSIB, AWM and other bodies and the focus on budget cuts make this key priority area, unlikely to have a clear organisational or lead partnership currently.

2.4 STRATEGIC APPROACH TO LOW CARBON TRANSPORT – DEVELOPING SMARTER TRAVEL CHOICES

2.4.1 Where do we want to be by 2020?

By 2020, carbon emissions from transport need to be reduced significantly compared to current levels due to changes in travel behaviour of individuals and organisations through the adoption of 'smarter travel choices'. These include 'soft' transport measures such as: workplace and school travel planning; personalised travel planning; travel awareness campaigns; public transport information and marketing; car clubs and car sharing schemes; teleworking and teleconferencing.

2.4.2 Where are we now?

Transport accounts for 30% of carbon dioxide emissions in the West Midlands (DECC, emissions by end user for 2007, released Feb 2010). CO_2 emissions from Transport in the West Midlands are not

falling and statistical data shows a relatively static picture overall in terms of reversing long established national and local trends, such as increasing car use. As a consequence, whilst progress is being made, efforts are failing to be evidenced by a step-change in both residents' and businesses' travel patterns in the West Midlands.

Relative to other regions a high proportion of people use cars to get to work. In 2007-08, 70% of journeys among West Midlands residents were by private transport, up from 68% in 2004/05, and higher than the average for England (excluding London) of 67%. The number of trips made by public transport is increasing in the metropolitan areas and accessibility to bus services is improving, but use of public transport is falling in other parts of the West Midlands. The average mileage walked by residents in the West Midlands is falling – down by over 5% since 2001; but cycling, particularly in the metropolitan areas, is increasing. 86% of schools in the West Midlands now have a School Travel Plan.

The stakeholder workshop identified a concern over how future transport investments in the West Midlands will contribute to the development of a low carbon transport system and the low carbon economy. Whilst strategic documents such as the Regional Transport Priorities Action Plan, the emerging West Midlands Metropolitan Area Local Transport Plan (LTP3) and DaSTS (Delivering a Sustainable Transport System in the West Midlands) all place considerable emphasis on reducing carbon emissions from transport, there are concerns over the level of commitment to taking forward 'softer' transport initiatives such as 'smarter travel choices', travel behaviour change and reducing the need to travel.

Deficit reduction and public sector spending constraints mean that there is significant uncertainty over future transport investments. However, the Coalition's recent *Programme for Government* identifies a number of low carbon transport priorities such as recharging networks for electric vehicles, changes to the way transport projects are assessed to prioritise low carbon transport proposals, rail infrastructure to support a low carbon economy and support for sustainable travel initiatives, including cycling and walking.

Smarter travel choice initiatives clearly fit well with these priorities and provide the potential for lower capital cost solutions (compared with capital intensive transport investments), which can also contribute to health, economic and social objectives. Examples of good practice in the West Midlands include the *Choose How You Move Programme* in Worcester which led to a 9% shift away from car driver trips between 2004 and 2008 and private sector travel planning by companies such as Carillion which has generated significant cost savings for the company. There is clearly a need for more widespread adoption of this type of low capital cost approach accompanied by behaviour change programmes for Birmingham and other cities to help businesses, employers, schools and individuals reduce the amount and the impacts of their travel choices.

2.4.3 What needs to be done to develop these initiatives further?

The broad range of measures needed to develop sustainable, low carbon transport in the West Midlands is laid out in the documents mentioned above. However, to increase the uptake of smarter travel choice measures it will also be important to:

- Ensure strong leadership across the West Midlands on smarter travel choice measures, informed by the strong economic case for investment in these measures relative to more capital intensive transport projects.

- Where possible, put revenue funding in place for developing smarter travel choice programmes. Although there are clearly uncertainties over the availability of funding, there may be opportunities to align budgets in areas such as health, e.g. by promoting health through cycling and walking.
- Support information sharing on good practice amongst local authorities, partners such as Sustrans and businesses on how to implement smarter travel choice schemes, e.g. good practice developed in Worcester city.

2.4.4 Partnerships for taking actions forward

Current structures in the West Midlands relating to transport include the *Regional Transport Panel,* which sits under the JSIB and is made up of Local Authorities; and the *Transport Advisory Group* made up of senior leaders from non-LA partners such as WMLB, AWM, Centro, Highways Agency and Network Rail. Consultees identified the current lack of a group amongst LAs and partners for bringing LAs together to share experience and good practice on the implementation of smarter travel choice initiatives.

The following recommendations are made for partnerships to take the actions forward:

- The JSIB, the *Regional Transport Panel* and the *Transport Advisory Group* should all emphasise the importance of smarter travel choice initiatives and identify roles for developing these initiatives further in the future.
- The *Regional Transport Panel* of Local Authority representatives should include a sub-group which focuses on the development of smarter travel choice initiatives, enables sharing of good practice amongst Local Authorities, informs the JSIB and prepares plans across the West Midlands for developing smarter travel choice projects and accessing any available funding.
- Individual Local Authorities should work with partners such as transport operators, Sustrans, local businesses and communities to develop local smarter travel choice initiatives, drawing on good practice developed by Worcestershire County Council and elsewhere.

Post May 2010 – The demise of the Regional Minister and Joint Strategy and Investment Board means that Centro in the form of the new Integrated Transport Authority has a key role on leading on this agenda with partners.

2.5 LANDFILL DIVERSION INFRASTRUCTURE

2.5.1 Where do we want to be by 2020?

By 2020, the West Midlands needs to have achieved waste reduction, recycling and landfill reduction targets; addressed the impending waste infrastructure capacity gap, including through the development of landfill diversion infrastructure (e.g. recycling infrastructure, energy from waste, organic waste treatment); and fully captured the associated economic and employment opportunities in infrastructure supply chains.

The need to develop landfill diversion infrastructure and associated supply chains was identified at the stakeholder workshop and also by the Low Carbon Regional Task Force which highlighted *Waste to Wealth* as one of the three priorities for the West Midlands and AWM as a lead partner in working with businesses to implement these priorities.

2.5.2 Where are we now?

Municipal waste arisings in the West Midlands are falling – back to 2000/01 levels by 2008/09, reflecting both waste reduction policies and recession - but there is a large variation across the West Midlands in terms of waste generation per person (Shropshire 529kg per person, Malvern Hills 307kg pp). Municipal waste recycling reached 36% in 2008/09, and municipal waste recovery reached 68%.

The economic incentives to reduce waste to landfill are increasing. The landfill tax rate was £40 per tonne in 2009/10 and is expected to double by 2015 to reach £100 per tonne by around 2018. Future cost increases should narrow the cost gap between landfill and recycling and organic treatment infrastructure. Other treatment processes are also likely to become economically viable in comparison with landfill by 2015.

Commercial and industrial waste is forecast to rise from 7.1mt in 2010/11 to 10.5mt in 2020/21 (Regional Spatial Strategy - RSS). The future waste infrastructure capacity gap is expected to be greatest in the high density urban areas of Birmingham, Coventry and Solihull. There is a significant economic risk for businesses and local authorities if sufficient alternatives to landfill disposal are not developed in the West Midlands.

There is therefore a pressing need to reduce waste generation, encourage reuse through approaches such as industrial symbiosis and develop the waste reprocessing and treatment infrastructure needed to accommodate the forecast increase in waste arisings and to divert a high proportion away from landfill. Infrastructure needs include energy from waste infrastructure (a key opportunity for the West Midlands which would contribute both to waste and energy priorities, as identified by the Low Carbon Regional Task Group – see *Box 3* below), organic / anaerobic digestion, and recycling and WEEE facilities (electronic recycling). The UK currently lags other European countries in implementing energy from waste facilities.

Box 3. Low Carbon Regional Task Group (2010) – 'Waste to Wealth'

The Low Carbon Task Group identified that "Not only is there the opportunity to set the West Midlands on the course of 'zero waste to landfill by 2020', hence making significant savings on landfill tax, but, by implementing a pilot of around 6 local regeneration projects, demonstrating a range of clean, next generation waste to energy technologies, we can develop the local manufacturing supply chain, create skilled jobs, exploit technologies being developed in the West Midlands' universities and reduce carbon emissions." The resource recovery and Energy from Waste (EfW) infrastructure pilot developments would ensure a significant proportion of the component supply from local manufacturers. The Impact Investment Locations are prioritised for major public (circa £2.2bn) and private sector (circa £7.5bn) investment. The local waste streams and power and heat requirements of 6 of these sites will be explored, working with public and private sector partners to plan the investments. The benefits are expected to include:

- Potential creation of thousands of jobs in the West Midlands to build, manufacture and operate local resource recovery/waste to energy plants.
- Collaboration with West Midlands universities to demonstrate and deploy advanced thermal conversion technologies to address a multi billion pound international market.
- Addressing the West Midlands' landfill diversion requirements.
- A £300 – 400 million market with major opportunities for local manufacturing and service businesses.
- Demonstrating new, more public opinion-friendly approaches would attract international attention and inward investment.

A considerable amount of work has already been undertaken across the West Midlands to identify the actions needed to develop landfill diversion infrastructure and associated supply chains, particularly within AWM's Waste Infrastructure Development Programme (WIDP) which has the following priorities:

- Reducing barriers to business recycling.
- Providing capital support for new infrastructure.
- Establishing West Midlands leadership on waste issues.
- Raising the profile and standards in the waste industry, including skills development in the waste industry and education of planners about waste infrastructure.

These priorities are being delivered through actions such as Waste Resources Action Programme (WRAP) and AWM small scale and large scale capital support programmes to increase productivity of existing facilities and to develop new waste infrastructure.

To guide the WIDP, AWM has established the *Waste Industry Advisory Group* (WIAG) to bring together key players, particularly from the private sector, to provide West Midlands leadership and to develop a coherent and coordinated approach to the development of new infrastructure and delivery of priorities, as well as securing strong links to the planning system (and the work of the Regional Technical Advisory Board (RTAB) on waste planning issues). WIAG's work has included the development of a waste infrastructure *Location Analysis Tool* to help accelerate the development of appropriately located waste infrastructure facilities and also links to work to develop strong supply chains in the West Midlands to build and operate the infrastructure – helping to link West Midlands suppliers to specialist turnkey facility providers (often from overseas).

2.5.3 What needs to be done to develop these initiatives further?

Future priority activities to help develop landfill diversion infrastructure and associated supply chains include:

- Private sector businesses to develop proposals for landfill diversion infrastructure – assisted by tools such as the 'location analysis tool'.
- Support to businesses in preparing detailed business plans for infrastructure investments.
- Local authorities to assess planning applications.
- Support to businesses in getting funding in place for permitted infrastructure proposals.
- Developing supply chains in the West Midlands for supplying the components and workforce for turnkey waste infrastructure installations (e.g. energy from waste plants).

2.5.4 Partnerships for taking actions forward

A number of partnerships relating to waste infrastructure exist in the West Midlands, including: the Waste Industry Advisory Group (WIAG); the Regional Technical Advisory Board (RTAB), which sits within the WM Leaders Board and largely focuses on waste planning issues; the Waste Forum, led by GOWM and mainly including Local Authorities, the Environment Agency and LARAC (the Local Authority Recycling Advisory Committee); and the Waste Alliance, run by IEWM and involving officers from Local Authorities with a focus on municipal waste.

Of these partnerships, the WIAG appears to be the best placed for ensuring progress and championing the development of landfill diversion infrastructure, because of its strong private sector

representation, its focus on economic aspects and supply chains, skills and its successful track record. To play this role WIAG could:

- be given a clear role in working with local partners and businesses in taking forward the *Waste to Wealth* priority;
- continue to be hosted by AWM, and potentially reporting to JSIB;
- include representation and links to the RTAB and Local Authorities;
- include skills as a key workstream, with a strong link to the Regional Skills Partnership;
- link to supply chain development work by partners such as WRAP and the Renewable Energy Supply Chain Opportunities (RESCO) programme; and
- link to business support, such as Business Link and the Manufacturing Advisory Service (MAS).

Post May 2010 – With the demise of AWM which established and supported the WIAG, this group is unlikely to be able to drive the commercial and industrial waste agenda and there is currently no suitable successor body.

2.6 ENVIRONMENTAL INFRASTRUCTURE

2.6.1 Where do we want to be by 2020?

Climate change for the West Midlands is likely to mean more frequent and severe flooding, summer precipitation shortages and summer heat. There will also be more intensive demands on the West Midlands' natural environment to cope with a growing population and economy. The natural environment will need to be more resilient to help cope with the impacts of climate change (such as increased demand for water, drought and urban heat island effects). In addition large areas of different types of habitat - that are well connected - will be needed to enable species to move in response to habitat changes brought about by climate change.

There was widespread support at the workshop for activities to protect and enhance environmental infrastructure – including water supply, flood defences and natural and manmade green infrastructure – that helps the West Midlands cope with a changing climate and supports the development of vibrant communities and business growth. Research has shown that for every £1 invested in green infrastructure, the West Midlands benefits from £2.3 in General Added Value (GVA) and £10.20 in Total Economic Value (TEV)[1].

2.6.2 Where are we now?

The West Midlands has many high quality and diverse landscapes, often with great potential for connecting people, wildlife, greenspace and the built environment. However, a legacy of intense land use has resulted in a landscape and environmental infrastructure that is frequently fragmented and of poor quality overall.

Across the West Midlands there is a strong correlation between the places with the worst quality environments and low indices of multiple deprivations. Poor biodiversity, landscape, air, soil and water are strongly correlated with poor life chances, poor health, low life expectancy, low educational attainment, low employment expectations and poverty. Whilst the most obvious correlations are in the metropolitan areas, they occur in rural areas too, such as historic coalfields.

[1] The Economic Value of Green Infrastructure, Natural Economy North West, 2008

While there has been some progress in delivering on local Biodiversity Action Plans and landscape scale projects limited progress has been made in developing the West Midlands' green infrastructure compared to other regions such as the North West, where the Natural Economy North West Group (NENW) has developed a green infrastructure strategy. This is being implemented by the Defra family (group of Defra funded agencies) plus other major land holders including the Land Restoration Trust, British Waterways and environmental trusts such as the Wildlife and Woodland trusts, National Trust, RSPB and BTCV (British Trust for Conservation Volunteers). A key aspect of the NENW strategy – not mentioned in the West Midlands Defra Agenda Group (DAG) strategy – is to work together to ensure that current and future environmental land management creates opportunities for local skills development and jobs opportunities for the workless by working with environmental and skills delivery bodies such as Groundwork.

2.6.3 What needs to be done to develop these initiatives further?

The Defra Agenda Group (DAG) has been working together to identify how more efficient joint working can help secure a healthy natural environment for the present and the future. DAG has identified three high level priorities required to:

- Encapsulate the issues and challenges facing the West Midlands;
- Highlight the interrelated nature of natural environment issues (including biodiversity, landscape, water, air and soil); and
- Focus on the most significant tasks to improve the natural environment in the West Midlands.

The three identified priorities are:

1) Quality - Significantly improving the worst environments which will require:

- Creation of high quality natural environments as a core element of regeneration, development and growth programmes and projects, in order to improve quality of life for communities.
- Better management of environmental infrastructure in existing communities to create high quality environments as a key component of economic and social wellbeing and also to reduce the risks of climate change impacts.
- Targeting areas with poor environmental quality through joint programmes, particularly focusing on areas of multiple deprivations in big cities.
- Remediate and restore contaminated land in the Black Country and urban areas.

2) Quantity – Enhancing and improving environmental infrastructure in key locations such as Impact Investment Locations (IILs) and Growth points to ensure that:

- Natural environment systems supply necessary ecosystems services such as water and waste treatment to underpin growth.
- Natural environment systems can function effectively (e.g. to provide flood alleviation, summer cooling, air quality etc.).
- High quality environments are provided for communities and as the basis for business growth.

3) Connectivity - Reconnecting landscapes

- Ensuring that West Midlands' ecosystems can play their necessary role in allowing UK biodiversity to adapt in the face of future climate change.
- Accelerating priority landscape scale projects, including biodiversity (e.g. river corridors).

In identifying priority projects or areas for investment it will be important to focus on environmental infrastructure which can provide multiple benefits including recreation, healthy living, sustainable transport routes, carbon fixing and flood alleviation functions.

2.6.4 Partnerships for taking actions forward

The Defra Agenda Group (DAG) - brings together the Environment Agency, Natural England, Advantage West Midlands, Forestry Commission, Government Office for the West Midlands, and Animal Health. Together these agencies own manage or have influence over a significant proportion of the West Midlands' environmental infrastructure. They plan to take forward a project on green infrastructure. However, as a public sector partnership DAG is not able to bring other funding sources – such as voluntary and private sector investment and grant aid - for implementation. It will also therefore be important for DAG to work with a wide range of other land holders and managers (including private land owners, LAs, Environmental Trusts and British Waterways, Highways Agency and Severn Trent etc.) to ensure that opportunities for multiple benefits – recreation, flood alleviation, biodiversity, urban cooling, sustainable transport and opportunities for local workless people to gain experience skills, experience and sustainable green collar jobs - are maximised wherever possible. A number of suitable partnerships already exist for DAG to work with.

Post May 2010 – A number of the Defra agencies have faced budget cuts or abolition which raises the question on how likely the current DAG group can drive and sell the environmental infrastructure agenda.

2.7 SUPPORTING THE DEVELOPMENT OF GREEN JOBS – GREEN AND LOW CARBON SKILLS

2.7.1 Where do we want to be by 2020?

Developing the skills to ensure that the West Midlands can benefit from the transition to a low carbon economy is a cross-cutting issue and represents a huge opportunity for the West Midlands. Supporting the creation of new green jobs is a high priority for the Coalition Government. The low carbon economy will require virtually the whole economy to develop new ways of working. Green / low carbon jobs span a very wide range of sectors and activities (see *Box 5* below), including resource efficiency skills in businesses, skills for clean and renewable energy, carbon capture and storage, low carbon transport, skills for energy efficient/low carbon housing and buildings, sustainable waste management skills and environmental and land management skills for climate change adaptation.

Box 5. Examples of Green Jobs

- **Jobs in recycling, reuse and remanufacture of materials**
- **Resource Productivity** – jobs in resource, waste, water and energy efficiency in businesses, households and the public sector.
- **Clean and Renewable Energy supply** - renewable energy such as wind (onshore and offshore), biomass, wave/tidal, microgeneration, solar, hydro, combined heat and power (CHP), 'clean coal', co-firing (e.g. burning biomass alongside coal) and new nuclear energy.
- **Low carbon transport** – including the development of low carbon vehicles, alternative fuels, hydrogen fuel cells and charging infrastructure for electric vehicles.
- **Carbon Capture and Storage** - capturing CO_2 emissions from power stations and industrial sites, then transporting and storing it in suitable geological formations such as disused oil and gas fields.
- **Physical Low Carbon and Resource Efficient Infrastructure** – including energy efficient/low carbon housing and buildings, infrastructure for low carbon transport including increased public transport and infrastructure for more efficient and alternative fuelled vehicles (e.g. electric vehicle charging networks), development of the energy grid,

smart grid and grid connection for renewable energy. Also development of waste management infrastructure, such as waste to energy plants, organic waste treatment (e.g. composting and anaerobic digestion), waste recycling and recovery facilities.

- **Climate change adaptation and environmental management and enhancement** – activities to respond to the impacts of changing climates, such as flood management, building design, development of green infrastructure, new crops and land management practices to provide natural carbon sinks (e.g. peat bogs, woodlands, forestry).
- **Low carbon and resource efficient products/services** – making products and delivering services which support carbon and waste reduction and which protect and enhance the environment. Also environmental technologies and services for waste management, wastewater treatment, energy efficiency, renewable energy, land remediation, air pollution control, environmental consulting and environmental monitoring.

Research commissioned by AWM and WMRO (*Environmental technologies skills review: key findings, issues and recommendations*, WMRO, October 2009) confirms that the environmental sectors in the West Midlands have grown significantly over recent years - despite the downturn - and that businesses forecast continued further growth in the face of strong market drivers, such as rising energy and waste disposal costs, policies for all new homes to be zero carbon emissions by 2016, as well as waste reduction and recycling targets.

Many organisations are already involved in the West Midlands in a wide range of activities to develop green jobs, these include examples in Box 6 below, and include: work by AWM to incorporate low carbon economy skills into the Regional Strategic Skills Priorities; RESCO and landfill diversion infrastructure supply chain initiatives; support for the Low Carbon Economic Area for advanced automotive engineering and the Centre of Excellence for Low Carbon and Fuel Cell Technologies (CENEX) in Coventry; the Waste Infrastructure Development Programme; Green New Deal (housing retrofit in Birmingham); work of AWM's Environmental Technologies Cluster Opportunity Group; innovation support for low carbon businesses; WMRO work on identifying environmental technology skills needs; and support for resource and energy efficiency skills support to businesses within the Business Link model, WRAP and Carbon Trust.

Box 6. Examples of activities to support development of green jobs in the West Midlands

- Supply chain development, e.g. RESCO and landfill diversion infrastructure supply chain initiatives.
- Actions within the Waste Infrastructure Development Programme.
- The work of AWM's Environmental Technologies Cluster Opportunity Group - EnviroTrade WM.
- Low carbon skills support is developing – e.g. Power Academy in Rugby and Wolseley Centre in Leamington Spa.
- The current drafting by AWM of the Regional Strategic Skills Priorities includes skills actions for the low carbon economy.
- Low Carbon Economic Area for advanced automotive engineering and the Centre of Excellence for Low Carbon and Fuel Cell Technologies (CENEX) in Coventry.
- Electric vehicle charging network projects such as CABLED.
- Green New Deal (housing retrofit in Birmingham).
- SWM activities to support the city region and Local Authorities in developing the low carbon economy.
- Sub-regional initiatives supported by AWM such as Re: Think Energy and the Marches Environmental Technology Network.
- Environmental business networks such as the Midlands Environmental Business Company (MEBC).
- UKTI and inward investment activities.
- Resource and energy efficiency support to businesses – integrating within the Business Link model, NISP, WRAP, Carbon Trust.

2.7.2 What needs to be done to make future progress?

To help ensure that the West Midlands fully capitalises on these opportunities for green / low carbon jobs there is now a need for:

- Work to translate the high level commitment to green jobs and the low carbon economy into a set of well understood practical actions across the West Midlands, on which the JSIB and partners can focus attention. There is a strong case for joint working across local authority areas, e.g. in developing joint skills provision in areas such as sustainable construction and renewable energy microgeneration.
- Monitoring and collating information on the diversity of activity across the West Midlands to support green / low carbon jobs and skills, so that we know what progress is being made. This information should be regularly reported to JSIB.
- Clearly embedding green / low carbon skills into the Regional Strategic Skills Priorities and local skills priorities and programmes.
- Developing shared agendas and joint working to develop low carbon skills – e.g. between Sector Skills Councils, skills providers, business support agencies, local authorities and major investors (developers, energy utility companies, contractors, infrastructure investors etc.).
- Skills proofing all major spending so that almost all public procurement and private investment is able to generate low carbon job opportunities (e.g. major construction projects, IILs and green new deal housing retrofit programmes).
- Aligning budgets, e.g. Local Authority services, health, management of natural areas, worklessness etc. to create opportunities for sustainable green jobs at low or no cost.
- Supporting businesses, employees and trainees so that they know where to go for further information on skill requirements and skills provision. Required actions include:
  - Effective engagement by Sector Skills Councils (SSCs) with businesses in the West Midlands to stimulate business demand for low carbon skills provision.
  - Organisations managing skills brokerage services (e.g. Business Link managing Train to Gain) should identify how they will embed low carbon skills elements into the brokerage services.
  - Active targeting of skills support to businesses involved in low carbon activities and businesses with the potential to diversify into these markets.
  - Better information on existing low carbon skills provision to help advisors signpost businesses to appropriate skills provision.
  - Integration of low carbon modules into existing relevant courses (e.g. renewable energy microgeneration modules in plumbing and heating engineer courses).
  - Actions to increase the number of apprenticeships in low carbon occupations.

2.7.3 Partnerships for delivering these priorities:

Many organisations will have a role to play in developing low carbon / green jobs and skills in the West Midlands. There would therefore be no benefit in attempting to pull this all together in one organisation because activities need to be integrated into so many different areas and span so many sectors of the economy. However, someone needs to have an overview of what is happening and to champion what could happen and ask the right questions to make sure that the West Midlands is getting the most in terms of low carbon skills and jobs from every pound of public or private spending. The JSIB could potentially play this important overview role, and could appoint a champion to keep questioning how the development of green / low carbon jobs is being supported by investments and partners across the West Midlands.

The JSIB could be supported in AWM, the Regional Skills Partnership and SWM, who could provide JSIB with the information collated from the agencies and partners involved in different areas (e.g. Sector Skills Councils) and also provide a clear framework for monitoring progress in the West Midlands in developing green / low carbon jobs and skills.

Post May 2010 – With the demise of AWM and the JSIB, and the lack of funding and organisational capacity yet in place for the emerging Local Enterprise Partnerships (LEPs), there is no clear lead coordination body for this agenda. SWM is working with partners to provide the low carbon evidence base for strategic level local authorities, chambers and their LEPs, and over time to provide a coordination and low carbon economy support function for the West Midlands LEPs. However the situation is currently worse not better.

ANNEXES:

ANNEX A – SCORING OF LONG-LIST OF POTENTIAL AREAS FOR ACTION

ANNEX B – LIST OF CONSULTEES AND WORKSHOP PARTICIPANTS

ANNEX C – SUMMARY OF BASELINE DATA

ANNEX A – SCORING OF LONG-LIST OF POTENTIAL AREAS FOR ACTION

AREA OF ACTION FOR LOW CARBON VISION 2020:	Workshop score*	Initial assessment of potential areas for action (prior to the stakeholder workshop) **									
		Significant and cost-effective carbon reductions	Closing the region's productivity gap	Making the region resilient	Closing the region's quality of life gap	Building on the region's strengths and characteristics.	'Low hanging fruit'	Solutions are well understood and proven	Least public investment	Added value of regional / sub regional actions	Total (pre-workshop assessment)
HOUSING/CONSTRUCTION:											
Area based retrofit schemes	26	3	3	2	3	3	2	3	1	1	21
Zero Carbon standards for all new social housing and buildings		3	3	2	3	2	1	2	1	2	19
Create local markets for innovation in low carbon construction		2	3	2	2	2	2	1	2	2	18
Encourage smart metering by utility companies		3	2	2	2	2	2	2	2	2	19
Innovative finance for low carbon buildings		2	2	2	3	2	2	1	2	2	18
ENERGY:											
Develop CHP (including through ESCOs)	11	3	2	3	2	2	2	3	1	3	21
Increase efficiency of buildings (linked to area based retrofit schemes above)	10	3	3	3	3	3	3	3	1	2	24
Energy efficient behaviour change	2	3	2	3	3	2	3	3	2	2	23
Micro renewables schemes		1	2	3	2	2	2	3	2	2	19
WASTE:											
Resource efficiency support to businesses	3	3	3	3	1	3	2	3	2	3	23
Household behaviour change - waste hierarchy		3	2	3	2	1	3	3	2	3	22
Sustainable procurement for recyclable products	3	2	3	2	1	1	3	3	2	3	20
Landfill diversion infrastructure - recycling, waste to energy, organic waste	10	3	3	3	1	2	1	2	2	3	20
Product design to minimise waste		2	3	2	1	2	2	2	3	2	19
TRANSPORT:											
Strategic approach to low carbon transport – integrating smarter travel choices	13	Area for action identified at Workshop – not included in the pre-workshop assessment									
Infrastructure for electric and alternative fuelled vehicles	3	2	3	3	2	3	2	3	1	2	21
Increasing walking and cycling	4	3	2	3	3	1	3	3	3	2	23
Smarter travel choices and behavioural change	7	3	2	3	3	2	3	3	2	3	24
Rail infrastructure improvements		3	3	3	3	2	1	2	1	1	19
Bus infrastructure improvements		3	3	3	3	2	1	2	1	1	19

AREA OF ACTION FOR LOW CARBON VISION 2020:	Workshop score*	Initial assessment of potential areas for action (prior to the stakeholder workshop) **									
		Significant and cost-effective carbon reductions	Closing the region's productivity gap	Making the region resilient	Closing the region's quality of life gap	Building on the region's strengths and characteristics.	'Low hanging fruit'	Solutions are well understood and proven	Least public investment	Added value of regional / sub regional actions	Total (pre-workshop assessment)
Passenger information (trains, buses)		2	1	3	2	2	2	3	2	1	18
Locating new development with intense transport use close to public transport		3	2	3	3	2	2	2	3	2	22
Increased park and ride		2	2	2	2	1	1	3	2	2	17
LOW CARBON JOBS:											
Public sector procurement to stimulate demand	20	3	3	3	2	1	2	3	2	3	22
Support for businesses supplying low carbon/resource efficient products and services	5	2	3	3	2	2	2	3	2	3	22
Green New Deal programmes (e.g. retrofit and greenspace management)	5	3	3	3	3	2	2	3	1	3	23
Supporting innovation in low carbon technologies		2	3	2	2	2	1	1	2	3	18
Supply chain development (e.g. RESCO)		2	3	2	1	2	2	2	2	3	19
Cross sectoral approach for low carbon skills	10	Area for action identified at Workshop – not included in the pre-workshop assessment									
ENVIRONMENTAL ASSETS AND CLIMATE ADAPTATION:											
Develop local food supply chains (local procurement and urban food growing)	1	2	3	3	3	3	3	3	2	2	24
Green infrastructure to reduce impacts of climate change - carbon storage, water resources, flood storage etc.	12	1	2	3	3	2	2	3	2	3	21
Climate change adaptation in urban areas	3	Area for action identified at Workshop – not included in the pre-workshop assessment									
Climate adaptation risk assessment to identify 'weak spots' in the West Midlands (e.g. business resilience).	6	Area for action identified at Workshop – not included in the pre-workshop assessment									
Diversify agriculture in vulnerable areas		1	2	3	1	2	2	3	2	2	18
Land mgmt for sustainable drainage and flood risk		1	2	3	2	2	2	3	2	2	19
Promote water efficiency & leakage control		1	2	3	1	1	3	3	2	2	18
Land management for biomass/biofuels	1	1	2	2	2	2	2	3	2	2	18

* The 'workshop score' shows the number of votes cast by workshop attendees to identify priority areas for making progress towards Vision 2020, bearing in mind assessment criteria as shown in *Section 1.3* of the report. **The initial assessment undertaken based on a literature review prior to the stakeholder workshop scored potential areas for action: 3 = highly rated; 2 = medium; 1 = low.

ANNEX B - LIST OF CONSULTEES AND 30th MARCH AND 12th MAY WORKSHOP PARTICIPANTS

NAME	ORGANISATION
Dejan Ajzenkol	Scott Wilson
Thomas Anderson	AWM – Adapatation
Philip Amison	AWM – Policy and strategy
Tim Baldwin	AWM - Waste
John Barraclough	Businesslink WM and SWM
Peter Blake	Worcestershire County Council
Peter Betts	URS Corporation Ltd
Mark Bedford	Wardell Armstrong Ltd
Phil Beardmore	Groundwork West Midlands
Shelly Beckett	Environment Agency
Chris Blakeley	West Midlands Leaders Board
Lis Broome	AWM – Environmental Technologies and Skills
Ed Brown	Energy Saving Trust Advice Centre
Catherine Burke	Martineau
Jeremy Bruce	Sustainability West Midlands - Voluntary Sector
John Carstensen	Society for the Environment
Paul Cobbing	Government Office West Midlands, Defra Agenda Group (DAG)
Rosemary Coyne	AWM – Built Environment
Heather Crocker	AWM - Transport
Les Duckers	Coventry University
Richard Elsden	Caterpillar and SWM
Steve Fitzgerald	Business in the Community
Susanna Flores	West Midlands Regional Observatory
Geoff Fletcher	AWM - Skills
Ian Glover	National Grid
Rebecca Gill	Government Office West Midlands
Yvonne Gilligan	Sustrans
John Hancox	Rolls-Royce plc
Ben Hanley	Birmingham International Airport Limited
Claire Holden	AWM – Low Carbon Clusters
Neil Hopkins	Birmingham City Council
Tim Jones	Coventry City Council
Justin Kempson	Charpak Ltd
Danny Lamb	WM Leaders Board
Jacky Lawrence	Warwickshire County Council
John Lee	Government Office – Economic Inclusion
Mike Leonard	Modern Masonry Alliance
David Middleton	Midlands Environmental Business Club
James Miller	Interserve Project Services Ltd
Helene Morissette	EON - UK
Claire Marsh	PwC
George Marsh	Sustainability West Midlands
Tom McGrath	Centro

NAME	ORGANISATION
Paul Murphy	Staffordshire County Council procurement project
Amanda Patterson	Environment Agency
Sharon Palmer	Environment Agency
Heather Pearce	BeBirmingham Sustainable Procurement Compact / Environment Agency
Peter Ulleri	2050 Logistics Ltd
Dr Peter Rayson	Birmingham City University
Matthew Rhodes	Encraft
Simon Rowberry	Centro
Waheed Saleem	NHS
John Sharpe	WM Centre for Constructing Excellence
John Sidebottom	Centro / SWM Board Member
Amanda Smith	English Heritage
Mike Smith	Utilicom / Birmingham District Energy Company
David Terry	Businesslink WM
Julia Turner	Waste and Resources Action Programme (WRAP)
Steve Turner	Lorien Engineering
Kathryn Warren	The National Trust
John Walker	West Midlands Regional Observatory
Graham Waddell	AWM - Energy
Deborah Walsh	Royal Institute of Chartered Surveyors
Paul Williams	National Housing Federation
Matt Wisdom	Thomas Vale Construction
Peter Woodward	Quest and Sustainability West Midlands
Simon Wright	Energy Saving Trust
Alan Yates	Accord Housing Group, SHAP

ANNEX C – SUMMARY OF BASELINE DATA

The following provides a summary of data on the West Midlands' current position across the following themes relating to the West Midlands' Low Carbon Vision 2020 which the priorities are seeking to address:

- Housing and buildings – sustainable construction and retrofit
- Energy – low carbon energy, energy efficiency
- Waste management – resource efficiency, waste infrastructure
- Transport – infrastructure, managing networks, behavioural change
- Environmental assets and climate change adaptation – managing our land resource for food, biomass, carbon storage, building resilience to climate change.
- Low carbon jobs – stimulating markets, business development, skills

3 HOUSING AND BUILDINGS – SUSTAINABLE CONSTRUCTION AND RETROFIT

Key baseline data for the existing housing sector can be summarised as follows:

- **Domestic energy consumption** was 48,144 GWh in 2007 (down from 49,425 GWh - equivalent to 13.14 mt CO_2 - in 2006) – which represents 33% of total West Midlands consumption (DECC 2010).

- **Housing stock**. The West Midlands has 2.3 million dwellings of which 80% are private (owner occupied or rented) and 20% are social housing managed by RSLs and ALMOs (Arms length management organisations). The total housing stock is split between 4 Housing Market Areas (HMAs) in the West (9%); Central (62.4%); South (15.3%); and North (13.3%).

- **Energy Efficiency**. Local Authorities, Housing Associations and national surveys show that average SAP ratings (2008) in the West Midlands are: 67 (High end EPC Band D) for social housing – 20% of the total stock; and 54 (EPC band E) private (owner occupier and rented) housing – 80% of the stock. (SAP rates energy performance on a scale of 0 to 100, with 100 representing the most energy efficient home. An Energy Efficiency 'A' rated home on the EPC Energy Efficiency Rating scale corresponds to a SAP rating of 92–100; a 'G' rated home corresponds to a SAP rating of 0–20).

- **Retrofitting of Social Housing**. The *Low Carbon Housing: Developing a Baseline for Refurbishment study* (AWM and WMRA 2008) estimated that 138,124 social homes (equivalent to 30% of the stock) were refurbished between April 2007 and March 2008, and 34% in the previous year. The highest rates of refurbishment were in the central Housing Market Area (HMA) (31.9% in 2007/8 and 45% in 2006/7) and lowest in the South HMA (22.9% 2007/8 and 22% in 2006/7) as shown in Table 1.1. As a result the percentage of dwellings not meeting the 'Decent Homes' standard 2008 had fallen to 27% from 38.5% in 2001 – roughly average for the other English regions.

- **Retrofitting of private housing**. Refurbishment of private stock (owner occupied and rented) only improved energy efficiency of an estimated 82,000 homes in 2007/8 – equivalent to only 4.45% of the private stock – with the highest rates again the in central HMA (5.14%) and lowest in South HMA (2.4%). Cavity wall insulation, loft insulation and double glazing measures were

installed in the greatest quantities, followed by gas central heating, gas boilers and central heating controls.

- **Fuel Poverty and health** - 17.2% of households in the West Midlands suffered from fuel poverty in 2007 – a fall from 26.9% in 1996 but an increase from 8.9% in 2005 – overall the second highest in the country. The average life expectancy in the West Midlands is only slightly below the UK average, but there is significant intra-regional variation of 5.7 years between local authority areas with lower life expectancy in areas.

- **Average House prices in 2009** (second quarter) were £178.6k across the West Midlands, up from £133.6k in 2003. Over the last 12 months, prices in the West Midlands have fallen 0.6%. The Housing Affordability Index[1] 2008 rose to 6.6 for the West Midlands as a whole (compared to 3.40 in 1997). Properties were least affordable in the Malvern Hills (10.2) and Oswestry (7.0).

Table 1.1 Existing Housing Stock, Energy Efficiency and rate of refurbishment

EPC (energy efficiency band)	SAP rating	Private owner occupier	Private rented	Social	SAP improvement to for retrofit (SAP 69)	Est. CO_2 Tcpa savings
A	92-100	0	0	0		
B	81-91	0	672	4,105		
C	69-80	67,087	21,963	93,950		
D	55-68	451,607	59,166	200,214	1-14	0.1-0.3
E	39-54	736,316	62,698	126,331	15-30	1.4-2.9
F	21-38	317,434	38,324	25,084	31-48	3.0-5.5
G	1-20	63,814	21,291	6,841	49-68	5.6-9.8
		1,636,258	204,114	456,525		
Of which est refurbished 2007-8		81,957		138,124		
Source: Low Carbon Housing: Developing a Baseline for Refurbishment, AWM and WMRA						

New Builds

- Housing completions for 2008/9 fell to 13,432 (compared to 15,719 in 2007-8 and 16,812 in 2006-7 respectively). Social affordable low-cost completions 2008/09 were 5,100 compared to RSS (Regional Spatial Strategy) estimates of 6,000-6,500 affordable dwellings required each year between 2001 and 2011.
- Work by SHAP has identified a range of options for achieving low and zero carbon build standards for new social housing.
- Recent work by Encraft (2010) suggests that the West Midlands already has 150-200 public and commercial low carbon buildings in place or planned.

Existing Activities to address CO_2 emissions

Policy tools which have been used to deliver domestic energy efficiency so far have included:

[1] Based on ration of lower quartile earnings to lower quartile house prices.

- The RES (Regional Economic Strategy) which includes a number of activities to support the retrofit agenda through, for example, public sector procurement, regeneration and support for sustainability standards.
- Local action to meet a 30% improvement target in household energy efficiency under the Home Energy Conservation Act 1995 (HECA).
- Programmes of improvements to meet the Decent Homes Standard in social housing by 2010;
- Strategy and action plan development to work towards UK Fuel Poverty Strategy targets using programmes such as Warm Front and Supplier Obligation funding (EEC).
- Regional Kick Start programme and other Home Improvement Agency activity to undertake home improvements in the private sector.
- Promotional activities with the Energy Saving Trust advice centre network.
- Some successful private home schemes – e.g. Birmingham Green New Deal (full retrofit) and MEA 'Keep Shropshire Warm' (subsidised insulation) - each reaching about 5000 households.
- More recently, the adoption of Local Area Agreement (LAA) national indicators 186 (per capita CO_2 emissions) and 187 (number of fuel poor households living in a home with a poor energy performance rating (SAP).

The West Midlands has research and development (R&D) strengths in the retrofit area[1]:
- SHAP, Stoke Centre for Refurbishment (CORE, BRE subsidiary 2 years away) and WMCCE;
- A local trading company (Wolsely) is very active in promoting low carbon products through its Sustainable Building Centre (insulation and micro-renewables technologies);
- Many local firms, social enterprises and community initiatives are already engaged with energy efficiency work and have the manufacturing and installation skills; but
- There is currently a lack of awareness of market opportunities amongst local businesses.

Retrofitting existing housing remains a huge task for the West Midlands. As shown in Table 1.2 over 0.9 million houses still require insulation, 0.8 million require cavity wall insulation, 0.67 million need solid wall insulation and 0.5 million need double glazing. Applying all these measures could cost £3 billion but could save 11,237 GWh of energy and 2.2 million tonnes of carbon pa.

Table 1.2. Opportunities for energy efficiency retrofitting of existing private homes

Millions	Insulation	Cavity Walls	Double Glazing	Solid walls	Total
No. households with potential	0.915	0.79	0.496	0.67	
% with potential	71%	57%	38%	100%	
GWh saving	1,363	2.402	772	6.700	11,237
Carbon saving million tcpa	0.283	0.481	0.157	1.273	2.196
Cost £ million	287	319	450	2,027	3,084
Source: Low Carbon Housing: Developing a Baseline for Refurbishment, AWM and WMRA					

(1) [1] For overall R&D spending West Midlands is 7th out of 9 English regions - West Midlands (2007) £1.320bn (5.9% of England total)

Documents and data reviewed – Housing, buildings and energy:

- Low Carbon Housing: Developing a Baseline for Refurbishment, AWM and WMRA (SHAP as a contributor) 2009 baseline assessment of existing housing refurbishment during the period April 2007 to March 2008
- SHAP 2007, 2008 and Beyond Decent Homes 2009
- West Midlands Task Force (WMCCE) Construction Action Plan
- CLG Select Committee on Beyond Decent Homes (how funding will be followed up) due for publication 24/3/2010
- West Midlands Energy Strategy, 2004
- West Midlands Regional Energy Strategy Monitoring Report 2006, West Midlands Regional Observatory, April 2006
- Summary Review of Data on Baseline Conditions in the West Midlands for RSS revisions (March 2010)
- Birmingham City Council – Special Planning Guidance:Places for the Future
- Home Energy Conservation Act 1995 (HECA)
- UK Fuel Poverty Strategy
- Birmingham District Energy Company website and brochure
- Department for Energy & Climate Change (2009) *UK Renewable Energy Strategy*
- Department of Energy & Climate Change announcements on Buy Back Tariffs
- The impacts of Climate Change on the Economy of the West Midlands: Key Risks and Opportunities, URS, 2007
- West Midlands Climate Change Action Plan Targets and Monitoring (2007)
- Local Food production: Edible Garden Show (Warwickshire 2011), Edible School Yard (City of Culture) and Gardening schemes for schools
- West Midlands Natural Environment Priorities, Draft March 2010, Defra family
- Climate Change Action Plan Monitoring Report, WMRO 2010
- DECC Energy Trends, September 2009, renewable electricity in the regions special.
- DECC electricity and gas consumption data, http://www.decc.gov.uk/en/content/cms/statistics/regional/mlsoa_2007/mlsoa_2007.aspx
- DECC high-level indicators of energy use at regional and local authority level, http://www.decc.gov.uk/en/content/cms/statistics/regional/high_level/high_level.aspx
- DECC total final energy consumption data at sub-national level,
- http://www.decc.gov.uk/en/content/cms/statistics/regional/total_final/total_final.aspx
- http://www.decc.gov.uk/en/content/cms/statistics/regional/total_final/total_final.aspx
- http://www.communities.gov.uk/housing/housingresearch/housingstatistics/housingstatisticsby/housingmarket/livetables/housepricestables/simpleaveragestables/
- Restats planning database November 2008, http://www.restats.org.uk/2010_target.htm
- DUKES 2008

4 ENERGY – LOW CARBON ENERGY, ENERGY EFFICIENCY

The West Midlands Regional Energy Strategy [1] sets the objective of 'sustainable, secure and affordable supply of energy for everyone'. The strategy covers business and housing energy efficiency and renewables targets as follows:

- Renewable generation equivalent to 5% of electricity consumption by 2010 and 10% by 2020 equivalent to: up to 75 MW of landfill gas fuelled generators, 100 x1.5 MW wind turbines and 27 x 1MW biomass/biogas powered generators.
- Heat from renewable sources providing 250 GWh (0.3% of consumption) by 2010 and 650 GWh (1% of consumption) by 2020.

(2) [1] West Midlands Regional Assembly (2004) *West Midlands Regional Energy Strategy*

- Production of 460 GWh of liquid biofuels per year (approximately 44 million litres - 2% of current diesel sales) by 2010.
- To meet the targets from 2020 the West Midlands needs to increase low carbon decentralised energy installed generation capacity by 300 GWh to meet a generation target of 1,700 GWh by 2020 (10% of West Midlands electricity generation as at 2004).

The Low Carbon Vision 2020 is more ambitious and suggests:

- Energy consumption by 2020 will be 20% below 2004 levels;
- 20% of all electricity will be supplied by renewables including:
  - large scale wind farms
  - micro-technologies integrated in regeneration projects, individual buildings and homes including micro-wind, solar panels, ground source heat pumps
  - Farm and community based schemes e.g. biodigesters, bioburners, wind farms, biomass)
- 10% of 2007 electricity generation will be from decentralised CHP (i.e. about 2,700 GWh);
- connections to the national or local grids will be enabled; and
- remaining fossil fuel power stations will have effective carbon capture and storage technologies.

During 2008 a new EU Renewable Energy Directive was negotiated in order to achieve an average 20% of the EU's energy coming from renewable sources by 2020 through negotiated country "shares" of this target. For the UK, 15% of final energy consumption - calculated on a net calorific basis, and with a cap on fuel used for air transport - should be accounted for by energy from renewable sources. The DECC renewable energy strategy (2009) adopted this target for 15% of national energy consumption to be generated from renewables sources by 2020.

The current performance of the West Midlands can be summarised as follows:

- Energy consumption was 6.6% below 2004 levels by 2007 but significant reductions are still needed to 2020 in the face of population growth and increasing household numbers.

- Renewables capacity in the West Midlands in 2008 was 182 MWe, with some 700 GWh of electricity generated from biofuels, landfill and a tiny amount of hydro. Renewable electricity generation had fallen from a peak of 1150 GWh in 2005 and 800 GWh in 2007 (in contrast to all other regions except London where overall generation from renewables has risen steadily) (source: DECC Restats).

Table 2.1: Renewables electricity capacity and generation, West Midlands, 2008

	No. of sites (2008)	**Installed electricity generating capacity MWe**		**Generation of electricity from renewables, GWh**
		2003	2008	2008
Hydro	4	0.6	0.6	1.3
Wind and Wave	2	-	-	-
Landfill Gas	28	43.9	49.5	267.5
Other biofuels	37	131.8	131.8	427.7
Total	71	182.0	182.0	696.5

Source: DECC Energy Trends, special report September 2009.

- A recent DECC report (September 2009) on renewable electricity generation in the regions shows that the West Midlands had 122 Combined Heath and Power schemes in 2007 with combined electrical capacity of 90 MWe and Heat capacity of 118 MWth. The number of schemes had fallen from a peak of 124 in 2007 and peak capacity of 104 MWe in 2006. The 122 schemes in 2007 generated 390 GWh of electricity and 721 GWh of heat. This was the lowest amount than any other region except the South West. However, schemes in the West Midlands had one of

the highest (>50%) renewables use in CHP. In addition to the Birmingham City Centre scheme there are schemes in Warwickshire and Worcestershire County Councils' CHP (biomass) civic buildings and other public buildings.

- Current (2010) installed decentralised and renewable capacity in the West Midlands delivers 1,422 GWh (AWM).

- There needs to be a fifteen-fold increase in installed decentralised energy capacity in the West Midlands (from the WMRES 2010 target) to meet the national target (2009) target. This represents a required increase of over 21,000 GWh generated in the West Midlands by 2020 from the current 2020 target of 1,700 GWh. This is an extremely ambitious challenge and will require a wide range of interventions to increase capacity.

- Decentralised energy supplies have been growing slowly but steadily. The Birmingham District Energy Company has a capacity of 1.5 MW electricity & 3 MW heat/hour saving 2,800 tcpa and 5% of energy bills for consumers. Plans to extend the scheme to the Eastside could result in 20,000-26,000 tcpa savings pa.

- There are also opportunities for improving energy efficiency by using smart metering (Box 2.1).

Box 2.1 Improving Efficiency of Energy Use: Smart Metering

Smart Metering involves using IT to understand energy use and manage domestic or commercial energy intelligently. It provides energy suppliers with real time information so that they can deliver service (warmth and ambience) rather than KWh. It also provides users with near real-time information on their energy use (e.g. UtilityFirst provides account monitoring on GooglePower). This could be a big opportunity for innovative products and real efficiency savings (up to 10% per Household). Small/medium sized companies have been innovative (e.g. Coventry based WatchBox) but larger utilities in the West Midlands have been lagging behind. SMEs need opportunities to access smaller markets without being swallowed by large utilities (e.g. by supporting German-style LA/business funded local R&D boards to promote innovative energy efficiency technologies).

5 WASTE MANAGEMENT

By 2020, the West Midlands needs to have:

- Achieved waste reduction, recycling and landfill reduction targets including:
  - National Targets: 50% household waste recycling by 2020; 75% municipal waste recovery by 2020; and 20% reduction in landfill of commercial and industrial (C&I) wastes from 2004 to 2010.
  - RSS Phase II Preferred Option target: Landfill 25% of C&I waste by 2020.
- Addressed the impending waste infrastructure capacity gap: The West Midlands RSS forecasts over 14 million tonnes of municipal and commercial and industrial wastes will be generated by the year 2020/21. The forecast gap in treatment capacity by the year 2020 is anticipated to be at least 3.7 million tonnes, despite an estimated current treatment capacity of 7 million tonnes across the West Midlands. The forecast treatment gap is 3.7 million tonnes.
- The West Midlands has fully captured the economic and employment opportunities associated with changes in resource use / waste management including development of landfill diversion infrastructure and the associated supply chains.

Where are we now?

Municipal and Household waste arisings in the West Midlands are falling – see table 3.1 - but there is a large variation across the West Midlands in terms of waste generation per person (Shropshire 529kg per person, Malvern Hills 307kg pp).

Table 3.1: West Midlands region – estimates of waste production ('000 tonnes)

Type of waste	'98/99	'99/00	'00/01	'01/02	'02/03	'03/04	'04/05	'05/06	'06/07	'07/08	'08/09
Municipal[1]	2,744	2,875	2,880	2,985	3,046	3,031	3,116	3,014	3,035	2,984	2,881
of which household waste is			*2,607*	*2,658*	*2,690*	*2,646*	*2,681*	*2,655*	*2,719*	*2,662*	*2,589*
Industrial & commercial[2]	7,561	*	*	*	7,265	*	*	*	7,336	*	*
Construction & demolition[3]	*	6,308	*	8,624	*	8,130	*	9,840	*	*	*
Special/ hazardous[4]	599	599	576	581	542	665	528	*	544	524	559

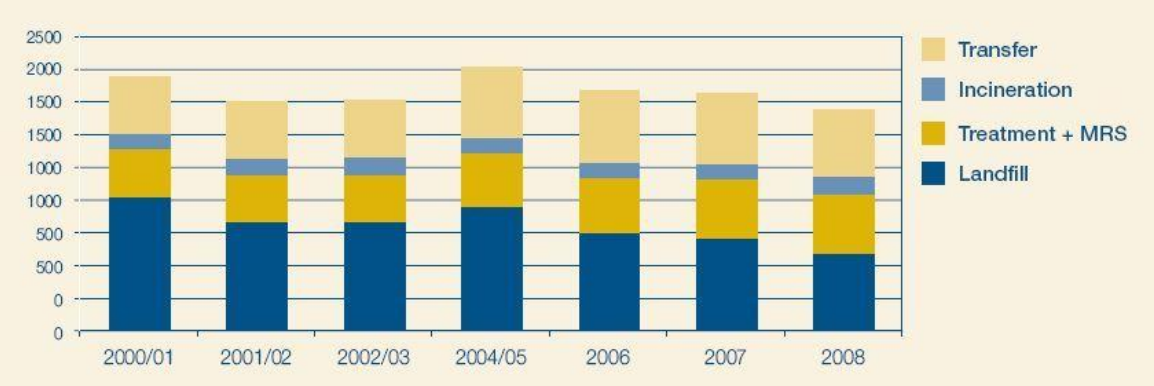
Source: WMRSS annual monitoring report 2009 (Feb 2010). 1 = Defra annual surveys; 2 = Environment Agency surveys; 3 = ODPM / Capita Symonds; 4 = Environment Agency SWaT data.

Household waste recycling rates in the West Midlands continue to increase (having increased up to the early 2000s), reaching 36% in 2008/09, and municipal waste recovery reached 68% (Defra Municipal Waste Management Survey 2008/09). DEFRA modelling indicates that every 1% increase in recycling saves one million tonnes of carbon dioxide equivalent.

Commercial and industrial waste is forecast to rise from 7.1mt in 2010/11 to 10.5mt in 2020/21 (RSS). The future waste infrastructure capacity gap is expected to be greatest in the high density urban areas of Birmingham, Coventry and Solihull. There is a significant economic risk for businesses and local authorities if sufficient alternatives to landfill disposal are not developed in the West Midlands.

The total amounts of waste deposited, transferred or treated in the West Midlands have fallen from a high of over 16 million tonnes in 2004/05 to about 12.4 million tonnes in 2008 (see Figure 3.1). Inputs to incinerators have remained fairly constant at around 1 million tonnes per year, most of which is to municipal waste incinerators, but there has been a 41% reduction in the amount of waste sent to landfill since 2001/02, and increases in the amounts of waste transferred and treated.

Figure 3.1: Waste management in the West Midlands ('000 tonnes)



Source: Environment Agency data presented in the WMRSS monitoring report February 2010.

The economic incentives to reduce waste to landfill are increasing. The landfill tax rate was £40 per tonne in 2009/10 and is expected to double by 2015 to reach £100 per tonne by around 2018. Future cost increases should narrow the cost gap between landfill and recycling and organic treatment infrastructure. Other treatment processes are also likely to become economically viable in comparison with landfill by 2015.

There is therefore a pressing need to reduce waste generation, encourage reuse through approaches such as industrial symbiosis and develop the waste reprocessing and treatment infrastructure needed to accommodate the forecast increase in waste arisings and to divert a high proportion away from landfill. Infrastructure needs include waste to energy infrastructure (a key opportunity for the West Midlands which would contribute both to waste and energy priorities, as identified by the Low Carbon Regional Task Group), organic / anaerobic digestion, and recycling and WEEE facilities. The UK currently lags other European countries in implementing energy from waste – and energy from waste accounted for only 0.4% in 2006 of energy consumption in the West Midlands (the third highest amongst English regions). If all carbon from waste was used to generate electricity, this would satisfy over 40% of household electricity demand in the West Midlands. However, waste must be treated as a resource, adopting the waste hierarchy of: reduction, re-use, recycling, composting and energy recovery and as a last resort disposal of waste.

Documents and data reviewed - Waste:

- Defra statistics on municipal waste arisings, http://www.defra.gov.uk/evidence/statistics/environment/wastats/bulletin09.htm
- West Midlands Regional Spatial Strategy (RSS) Monitoring report (Feb 2010)
- Waste – A Future Resource for Business: Developing the evidence base for a targeted market intervention strategy for the West Midlands, AWM, March 2008
- The Regional Approach to Landfill Diversion Infrastructure: Main Report, AWM, July 2009
- Evidence of Success: Developing the UK's first low-carbon regional economic strategy, AWM
- Challenge or Opportunity? How to Plan for Climate Change: A State of the Region Thematic Report, West Midlands Regional Observatory, November 2009
- West Midlands Regional Sustainable Development Framework
- West Midlands Economic Strategy
- Evidence of Success: Developing the UK's first low-carbon regional economic strategy, AWM
- Understanding the West Midlands' Carbon Gap (March 2009)
- Decoupling into a low carbon Economy – by the West Midlands Regional Observatory (March 2009)
- West Midlands Low carbon Vision 2020 (Forum for the Future, for SWM - April 2009)

6 TRANSPORT

Transport accounts for 30% of carbon dioxide emissions in the West Midlands (DECC, emissions by end user for 2007, released Feb 2010). CO_2 emissions from Transport in the West Midlands are not falling and at a Regional level the statistical data shows a relatively static picture overall in terms of reversing long established national and local trends, such as increasing car use and declining bus use – though there are sub-regional differences, notably between the former urban metropolitan area and other parts of the region. As a consequence, for the majority of WMRSS transport policies, whilst progress is being made, the region's efforts are failing to be evidenced by a step-change in both residents' and businesses' travel patterns. The scale of the emissions from the transport sector imply a need to both reduce our journeys and develop more efficient means of transport.

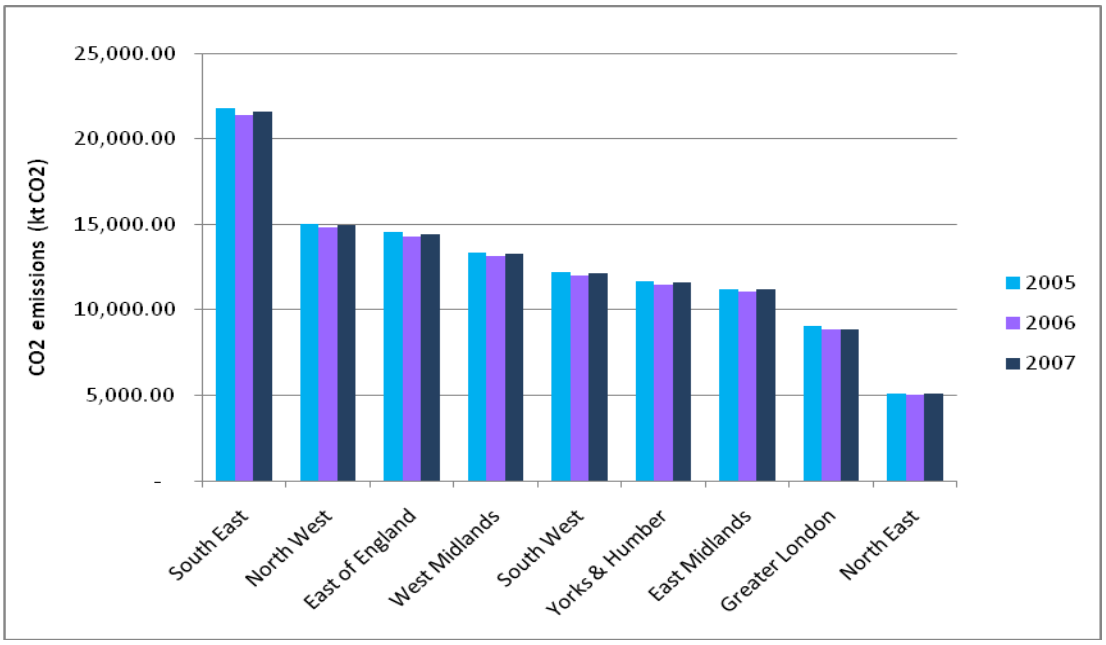
In 2007 CO_2 emissions from road transport in the West Midlands were 13,276 kt CO_2 per annum (see figure 4.1 below). This was the fourth highest level of emissions of the English regions and also the fourth highest in terms of road transport emissions per capita. In line with national trends, it represented a slight increase on 2006 and a slight decrease on 2005.

Miles Travelled per Person per Annum (all modes). The RSS target was to stabilise the number of miles travelled per person per year at its 1999/00 level of 6,835 miles by 2011.

Traffic flows for motor vehicles on the West Midlands' roads increased by 11% from 1998 to 2008, compared to an 11.3% increase for England (other than London). Rates of increase in traffic flows were higher in shire counties (13.3%) than in the urban areas (8%). (Source: DfT, July 2009).

Mode of transport - Data from Department for Transport (DfT) shows that car travel comprises nearly four-fifths (77.9%) of the total mileage undertaken in the Former Metropolitan Area and 87.3% of the total mileage in the rest of the West Midlands.

Figure 4.1 CO2 emissions from Road Transport



Source: National Travel Survey, Department for Transport, Oct 2009

The West Midlands has a relatively high proportion of people using their cars to get to work. In 2007/08 the region had the second highest proportion of trips made by car at 69.4% (see *Table 4.1*). This is an increase of 1.7% from 2004/05. The difference to the other English regions (discounting London) is relatively minor with the East of England having the highest proportion of journeys by car in 2007/08 (70.4%) and the North East having the lowest proportion at 62.2%. London is the main exception with just 41.6% of journeys made by car in 2007/08.

Within the West Midlands there is a clear difference between the former metropolitan county area where a lower percentage of journeys were made by car compared with the rest of the region, as shown in Table 4.1.

Table 4.1: Trips and modal split by car and public transport

	Car (Driver and Passenger)			All Public Transport		
	Former WM Met Area	Former WM Non Met Area	WM Region	Former WM Met Area	Former WM Non Met Area	WM Region
1991/2001 (3 year average)						
Number of Trips	630	753	691	126	60	93
% of all modal trips	62.7%	68.3%	65.6%	12.5%	5.4%	8.8%
Miles travelled	4,884	6,860	5,870	700	643	671
% of total miles	84.0%	87.3%	85.9%	12.0%	9.4%	11.4%
2007/2008 (2 year average)						
Number of Trips	640	753	704	137	46	86
% of all modal trips	63.9%	73.5%	69.4%	13.7%	4.5%	8.5%
Miles travelled	4,372	6,757	5,718	972	689	812
% of total miles	77.9%	87.3%	84.0%	17.3%	8.9%	11.9%

The WMRO estimated that in 2008, 25.5% of West Midlands' workers travelled to work in sustainable ways (public transport, bike, walking or home working), which compares to an England average of 32.6% (WMRO Key Sustainable Development Indicators 2008-09).

Congestion is an issue for the West Midlands, traffic flows increased by 23.6% between 1993 and 2008. More cars will be on the road in 2025, projections show a 30% increase in the distance travelled by car drivers from 2003 levels to 2025 in England (Source: National Transport Model, DfT).

Average speed of trunk road traffic in the morning peak in the West Midlands fell from 55.9 mph in 1995 to 49.4 mph in 2003.

From 1998 to 2008, traffic on major roads (motorways and A roads) increased in the West Midlands by 9.4% compared with an average increase in England (excluding London) of 10.3%.

Car ownership - Only 21% of West Midlands' households did not own a car in 2007, compared with 22% nationally (excluding London).

Bus Usage - Patronage data indicates that overall bus usage declined by 8.8% in the West Midlands between 2000/01 to 2007/08 (8.4% fall in the former met area and 11.1% fall in the rest of the region) (Source: WMRS Monitoring report (Feb 2010)).

Public transport accessibility -In the Former Metropolitan Area, the vast majority (84%) of new housing sites are located within a 10 minute walk of a bus or Metro station with a 20 minute frequency. However, in the rest of the West Midlands whilst the number of sites with the same level of accessibility has increased from 25% in 2007/08 levels still only equate to 31%. Levels of accessibility to a 60 minute frequency service are much higher in both the Former Metropolitan Area (97%) and the rest of the region (66%).

Rail usage continues to rise in the West Midlands and nearly doubled between 1995/06 to 2007/08 (Source: National Rail Trends, June 2009).

Walking and Cycling – The WMRSS includes a policy to increase walking and cycling. The indicator shown below shows a decline in walking mileage and the number of walking trips. Between 1998 and 2005, the average mileage walked by residents of the West Midlands remained relatively static, at approximately 175 miles. However, since 2005/06 the average mileage walked has reduced to 162

miles in 2007/08. This was the lowest value of all the English regions and one-sixth (16%) lower than the average for England. Since 1999/2001, the total mileage walked by residents of the West Midlands has decreased by 5.8%, whilst the total distance walked in England as a whole has increased by 3.2%.

Table 4.2: Annual walking mileage and the number of walking trips

	Averaged years							
	1998/2000	1999/2001	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
West Midlands	172 miles: 278 trips	175 miles: 247 trips	172 miles: 227 trips	179 miles: 240 trips	177 miles: 239 trips	165 miles: 229 trips	162 miles: 214 trips	162 miles: 203 trips
England	186 miles: 269 trips	188 miles: 257 trips	191miles: 242 trips	195 miles: 246 trips	203 miles: 248 trips	202 miles: 249 trips	Data is not available	192 miles: 219 trips

Source: WMRS Monitoring report (Feb 2010) and National Travel Survey, Regional Transport Statistics 2007, 2006, etc

Two per cent of those in employment and living in the West Midlands cycled to work, compared to 3% for England as a whole. 10% of those in employment and living in the West Midlands walked to work which was slightly below the level for England as a whole (11%). (Source: Labour Force Survey in Regional Transport Statistics, 2009).

The regional cycling index (WMRSS monitoring data, Feb 2010) shows that cycling levels for the West Midlands increased by 16.1% from 2007/08 levels. This is a considerable increase on the previous year and represents growth of 21.1% when compared to the 2005/06 baseline. During 2008/09, the Former Metropolitan Area's cycling index increased by 10.1% from 2007/08 levels (104.6) to 114.7 whilst in comparison the Non-Metropolitan Area's cycling index increased by 0.9% to 106.3.

Promoting Travel Awareness: Percentage of schools with School Travel Plans (STP) – The RSS target is for 100% of schools to have STPs by 2010/11. In 2008/09 86% of schools in the West Midlands had an STP. This exceeded the national achievement figure of 81%. Focus is now shifting to help schools implement, monitor and update STPs. (Source: RSS monitoring report, Feb 2010).

Percentage of employers with workplace travel plans – The RSS target was for 30% of all employees to work in organisations committed to work place travel plans (WTPs) by 2011 and 50% by 2021. Data relating to the development and implementation of WTPs is incomplete across the West Midlands.

Priorities for future:

The West Midlands Regional Transport Priorities Action Plan (Dec 2008) identifies the following priorities:

- Birmingham New Street Station
- Birmingham International Airport - Runway Extension and Surface Access
- M5/M6 Capacity Improvements and Motorway Box Active Traffic Management (ATM)
- Rail Freight Upgrades – Peterborough and Southampton to Nuneaton
- Regional Rail Capacity, both for passengers and freight
- Black Country 'strategic transport spine'
- North Staffordshire Integrated Transport Package
- New Growth Points/Settlements of Significant Development (NGP/SSD)
- Smarter Choices

Delivering a Sustainable Transport System in the West Midlands (DaST) (June 2009) identifies three strategic priorities:

- Priority Theme 1: More sustainable communities across the West Midlands;

- Priority Theme 2: Better travel choices supporting a stronger, lower carbon economy; and
- Priority Theme 3: More efficient and reliable journeys in urban areas and connecting the region.

Challenge or Opportunity? How to plan for Climate Change – WMRO (2009) states that "It has been clear for many years that there is no single 'magic bullet' that will help transport to reduce its carbon footprint. We need a number of inter-related measures and a collective change of behavior (see *Box 4.1* for successful behavior change programmes elsewhere). Transport cannot solve these problems in isolation. For transport to achieve meaningful targets (locally, regionally or nationally) there must be a multi-disciplinary, holistic approach involving a combination of strong behavioural change and strong technological innovation, including policy areas such as:

- new 'traditional' infrastructure, such as railways and bus
- new 'low-carbon' infrastructure, such as electric vehicle plug-in stations
- high speed broadband (and emerging communication technology) to enable remote working
- more efficient vehicles (the carbon efficiency of cars could be improved by 30% to 40% through new technologies such as: electric vehicles, hydrogen and biofuel powered transport).
- alternative fuels
- more walking and cycling
- better quality and more public transport
- lower speed limits
- integrated land use and transport planning
- reduced car use
- new information and communication technology developments
- national road pricing
- long distance travel substitution
- reduced emissions from freight
- 'softer' factors such as personalised travel planning and travel blending

The challenges and opportunities vary significantly between the urban and rural parts of the region. In the urban areas there is a scale of density that supports investment in e.g. public transport options. This is more difficult to achieve in rural areas. Communities in rural (particularly remote rural) areas have a greater dependence on private transport.

Box 4.1 Travel Behaviour Change Programmes: Smarter Travel Sutton and iMoveLondon

Smarter Travel Sutton (STS) is a three year programme to achieve changes in travel behaviour among the London Borough's residents and working population. It received 3 years of funding from Transport for London (2006-9) and is now run by London Borough of Sutton's transport team. STS is a large scale integrated behaviour change and social marketing campaign to increase awareness and positive attitudes to smarter travel options and to reduce barriers to sustainable travel. The programme has included school and workplace travel planning, personal travel advice and info, advertising, marketing and promotion, car clubs, car sharing and cycle parking. The programme uses persuasion and provision of information supported by small scale infrastructure schemes. It has been spectacularly successful in: increasing cycling by 75%, bus by 16% and reducing residents use of the car by 6%; providing a supportive environment with all schools having travel plans and 16,000 employees working in organizations with travel plans; and getting high rates of participation in initiatives – e.g. 10,000 primary school children regularly take part in the WoW (Walk Once a Week) initiative. It's most recent campaign 'Spring into Action' aims to get 20,000 residents focused in 2 areas to take up cycling with a door-to-door distribution of leaflets with a set of promotional vouchers worth over £100 for cycling based services. The website (www.smartertravelsutton.org) has been designed to give users information about public transport, walking and cycling journey options and services including car clubs and cycle training. Every STS project, initiative and campaign directs traffic to the website. It also provides information for employers and schools on how to implement schemes such as travel plans. The website also has direct links to the borough's car club and TfL's Journey Planner. The programme has demonstrated that modal shift away from the car has economic, social, environmental, and health benefits and that positive intervention in travel choices is easily accepted by local people and not met with hostility or indifference.

Evaluation of the programme has identified the keys to success as:

- Careful audience research and market segmentation
- Planning and integrated use of communication channels and tools
- A base of political support
- Stakeholder engagement to create ambassadors and delivery partners (e.g. working with businesses, schools and local media to reinforce messages and act as trusted intermediaries)

http://www.smartertravelsutton.org.uk/_uploads/documents/STS_thirdANNUALREPORT2010_V08.pdf

imovelondon http://www.imovelondon.co.uk is a pledge campaign run by TfL and launched in July 2007. It encourages the Capital's car users to switch one car journey a week for sustainable transport modes. Research indicates that, by making a pledge, people are more likely to commit to changing their travel behaviour and subsequently feel more compelled to sustain it.

Documents and data reviewed - Transport:

- West Midlands Regional Transport Priorities Action Plan (Dec 2009)
- DECC, data on emissions by end user for 2007 (released Feb 2010)
- Transport data - National Transport Model, DfT
- National Rail Trends, June 2009
- National Travel Survey, Regional Transport Statistics 2007
- Labour Force Survey in Regional Transport Statistics, 2009
- Centro - Annual Statistical Report - 2008-2009
- Centro Consultation Draft - Integrated Public Transport Prospectus (2009)
- Delivering a Sustainable Transport System in the West Midlands (June 2009)
- West Midlands Regional Transport Priorities Action Plan (Dec 2008):
- WMES and WMRSS
- WMRO Key Sustainable Development Indicators for the West Midlands 2008-09

- West Midlands Low Carbon 2020 Vision
- West Midlands Regional Funding Allocation
- West Midlands Region Rail Development Plan (June 2009 consultation)
- Regional Freight Strategy
- Regional Transport Statistics, Department for Transport 2009
- Health effects of climate change in the West Midlands Technical Report, 2010
- Delivering a Sustainable Transport System in the West Midlands (DASTS) (June 2009)
- Challenge or Opportunity? How to plan for Climate Change (WMRO, 2009)
- Local Transport Plans (e.g. documents relating to LTP3 for the West Midlands Metropolitan Area)
- Low Carbon Transport: A greener future - Department for Transport (2009)
- Towards a sustainable transport system - Department for Transport (2007)
- Delivering a Sustainable Transport System (DASTS) - Department for Transport (2008)
- The Eddington Transport Study – The Case for Action (December 2006)
- The UK Low carbon transition plan - Department of Energy & Climate Change (2009)

7 ENVIRONMENTAL ASSETS AND CLIMATE CHANGE ADAPTATION – BUILDING RESILIENCE TO CLIMATE CHANGE

The West Midlands has many high quality and diverse landscapes, often with great potential for connecting people, wildlife, greenspace and the built environment. However, a legacy of intense land use has resulted in a landscape and environmental infrastructure that is frequently fragmented and of poor quality overall.

The current state of environmental infrastructure can be summarised as follows:

- **Landscape quality**. Good quality landscapes provide access, recreation and tourism opportunities, economic returns and natural environment services. Some key parts of the West Midlands countryside are protected by national and international laws. These include: 19 Special Areas of Conservation (SAC); 1 Special Protection Area (SPA); 16 National Nature Reserves (NNR); 129 Local Nature Reserves (LNR); 1 National Park; 5 Areas of Outstanding Natural Beauty (AONBs); and 441 Sites of Special Scientific Interest (SSSI), covering an area of 26,000 hectares; this is the smallest area of SSSI land in any government region except London. Landscape features are being lost and fragmented in specific areas leading to a loss of landscape distinctiveness (including tranquillity).

- **Biodiversity.** Many key habitat areas in the West Midlands have become much smaller in size or patchy over recent decades, but still provide about 10% of England's total. The main kinds of priority habitats in the West Midlands are lowland meadows, acid grassland, wood pasture and park and heathland and cereal field margins. West Midlands' biodiversity resource is in many respects poor relative to other regions and continues to decline overall. Many, but not all, areas of damaged habitat can be restored over decades. These should be a priority for action.

- **Water resources.** The main rivers in the West Midlands are the Rivers Wye, Severn, Avon, Stour, Tern, Teme, Trent, Sow, Dove and Tame. Over 1,400 million litres of water per day (Ml/d) are extracted for public water supplies and 230 Ml/d for industrial uses. An average of approximately 80Ml/d are abstracted for spray irrigation, mainly during the summer months when river flows are at their lowest. Domestic water consumption is around 132 litres per person per day (pppd) and has fallen (from 138 litres pppd in 2006/7 and 140 litres pppd in

2000/1) but total domestic consumption is likely to rise to 2015 (1,000 Ml/day – 63% of total water demand) because of demographic change and recovery from recession.

- **Water quality**. The West Midlands has no coastline so all industrial and domestic discharges are to water courses which are therefore a vital part of the West Midlands' environmental infrastructure. Based on an Environment Agency survey of 4000 km of rivers and canals in the West Midlands in 2006:
  - 39% had high or very high nitrate levels
  - 50% had very high or excessively high phosphate levels
  - 93% were good or fair chemical quality
  - 90% were good or fair biological quality
  - 80% of the West Midlands' rivers reached their River Quality Objective (RQO)
  - 11% had significant failures of their RQO, the remainder had marginal failures

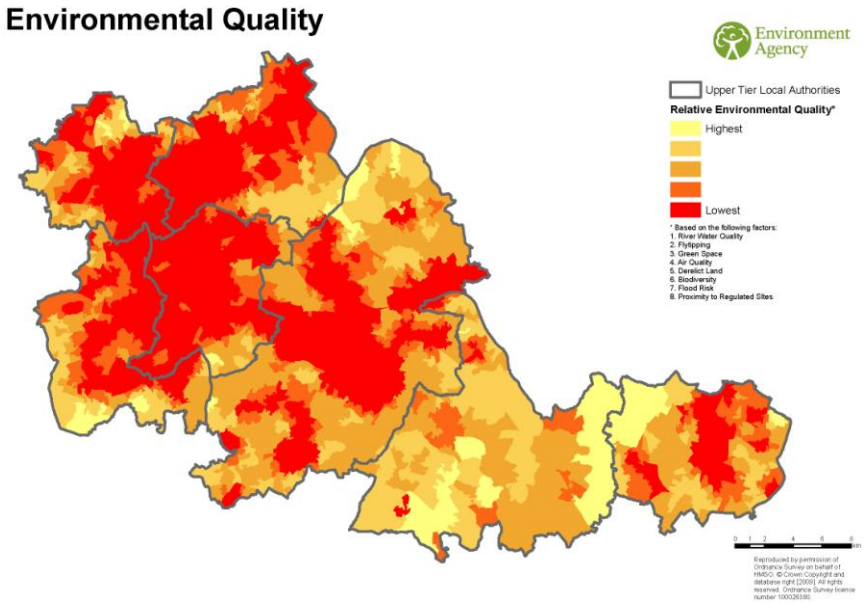
- **Diffuse urban water pollution** results from misconnections, runoff from hard surfaces, and poor industrial management. This is a particular issue in headwaters in urban areas of rivers such as the River Tame and River Avon which contribute to poor water quality downstream and challenges in meeting Water Framework Directive standards. High levels of nutrients are the cause of algal blooms and reduced biodiversity. High nitrates can cause problems with provision of drinking water. In low flow conditions many of the West Midlands' rivers have no further availability of water for abstracted (with the exception of Birmingham). Average daily per capita water consumption.
- **Flooding**. Around 6% of land in the West Midlands has a 1% chance of flooding in any one year. Around 4% (94,000 properties) are at risk from flooding. Nearly 83% of these properties (~78,000) are residential properties; around 17% (~16,000) are commercial properties. One third (34,000 properties) are at significant risk from flooding and 27,000 are at moderate risk from flooding. Forecast increases in intense rainfall events may cause further increases in flood risk, particularly in areas where urban development and culverting has significantly modified natural watercourses and resulted in 'flashy' hydrological response curves and risks of localised blockages and drainage problems.
- **Soils.** Peat has a high organic content and is important for carbon storage. UK peat soils store 10 billion tonnes of carbon, 50% of UK's carbon store. Other soils are also important for carbon sequestration. Poor management can lead to impact on water (sediment, nutrients, and pesticides) and reduce productivity. Some crops may be grown in locations or under management systems that which may increase risk of erosion.
- **Agricultural land**. Over 950,000 hectares of land are used for agriculture in the West Midlands, accounting for over 70 per cent of land use in the region. Farming is mainly livestock (2.3 million sheep, 740,000 cattle, 224,000 pigs and 9,800 goats) of which almost 30% are in Staffordshire and 30% in Herefordshire. There are also areas of intensive arable farming – particularly potatoes and cereals in Herefordshire. Agricultural is also important for gross value added, employment and farm businesses in Warwickshire, Shropshire and Worcestershire. Grade 1 and 2 agricultural land will be required to meet food security in the future but is vulnerable to flooding and lack of seasonal water for irrigation. A flooding event similar to 2000 could cost the agricultural sector £20 million in lost and damaged crops and impacts on livestock. Vulnerable areas such as the Vale of Evesham, dependent on irrigated horticulture and potatoes, could experience 20% greater demand by 2020 as a result of climate change.

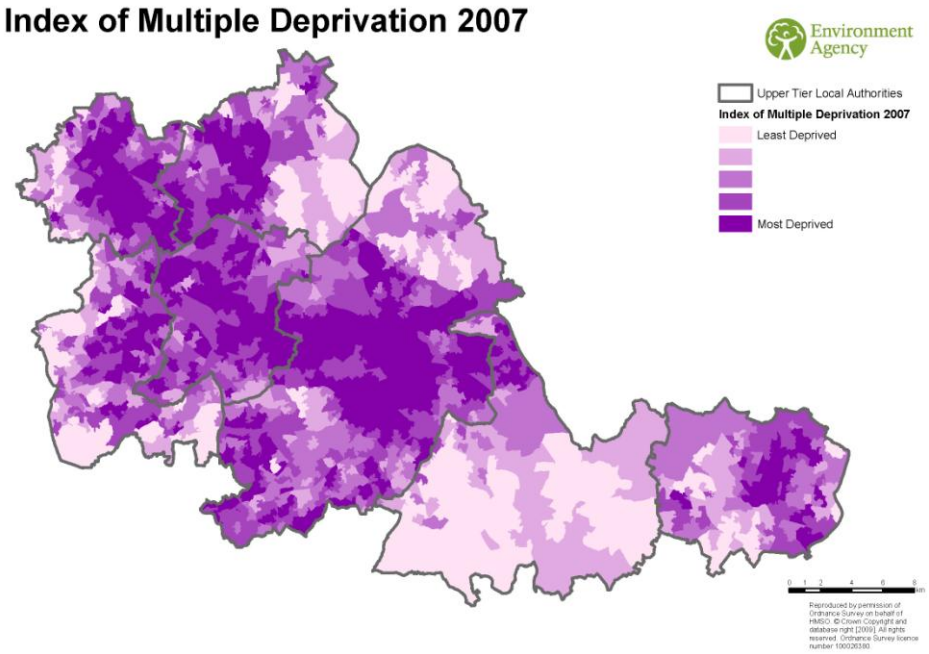
- **Climate Change**. The UKCIP 09 model predicts that by 2050 in the West Midlands:
  - Annual mean temperatures could rise by up to 2.5ºC
  - Warwickshire and the south east of the region are expected to warm up more than Shropshire and the north of the region

- Winter rainfall could increase by up to 20%
- Summer rainfall could decrease by up to 30%
- Sea levels on the West Coast could rise by up to 83 cm
- Soil moisture could fall by up to 35%
- By 2080: Average annual temperatures may increase by up to 4.5 degrees C; Winter rainfall may increase by up to 30%; and Summer rainfall may decrease by up as much as 50%

Figure 5.1 shows the close correlation between poor natural environment quality and multiple deprivations in all areas but particularly in urban areas.

Figure 5.1 Comparison of natural environmental quality and indices of multiple-deprivation for the West Midlands conurbation (From DAG Group, Draft, 2010)





Source: DAG, 2010

Documents and data reviewed – Environmental Assets and Climate Change Adaptation:

- The State of the Natural Environment in the West Midlands (2009)
- West Midlands: Fit For The Future? **-** Preparing the region for economic recovery. Green Infrastructure – Bill Heselgrave for WMRO
- The Economic Value of Green Infrastructure – Forestry Commission
- Water Framework - River Basin Management Plans
- West Midlands Climate Change Adaptation Programme (May 2009)
- West Midlands Climate Change Action Plan - Targets & Monitoring – TM1Stage 227 March 2009
- West Midlands Climate Change Action Plan (December 2007)
- Environment Agency work on mapping environmental inequalities
- West Midlands Forestry Framework (2004) and Delivery Plan 2007-10

8 LOW CARBON JOBS – STIMULATING MARKETS, BUSINESS DEVELOPMENT, SKILLS

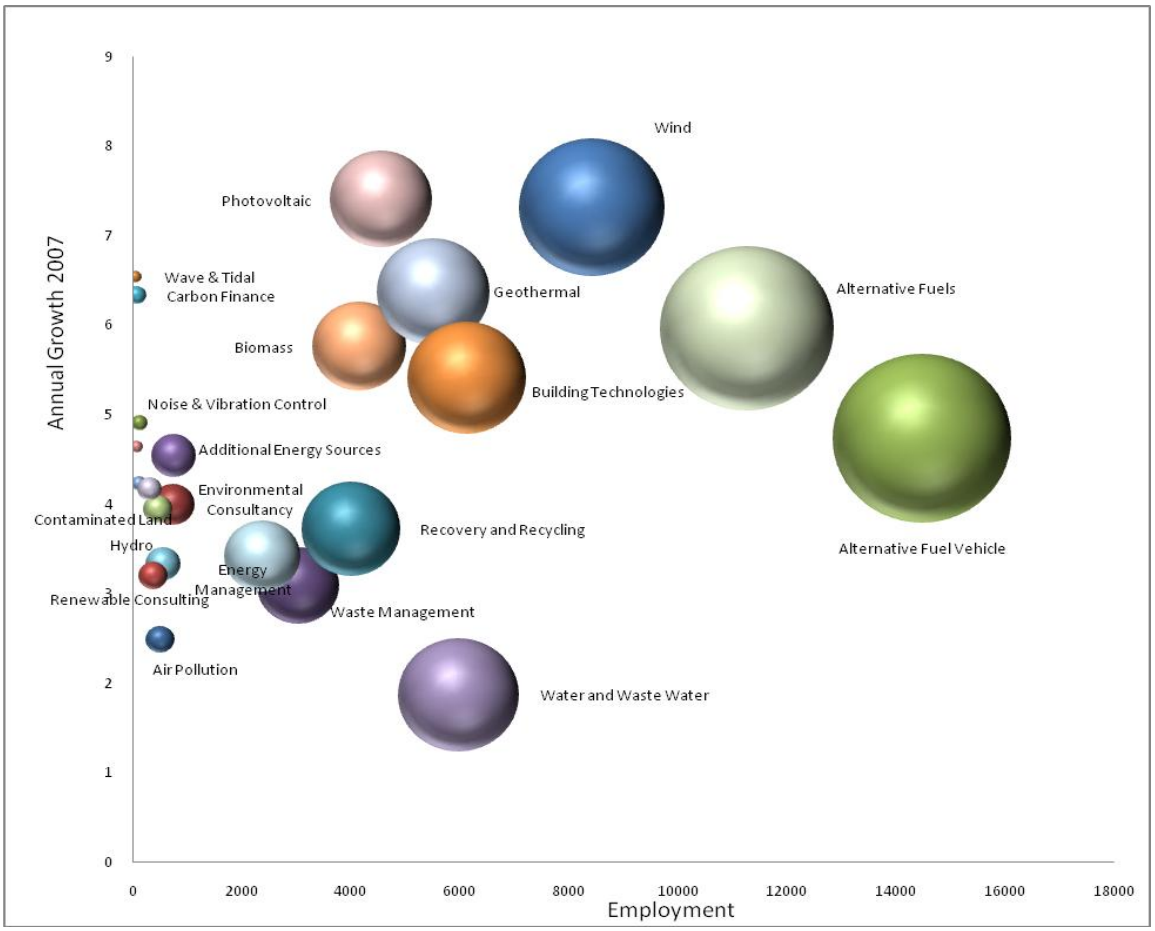
The West Midlands Economic Strategy defines the low carbon economy:

"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 West Midlands' 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 optimizing transport networks and developing a low-carbon built environment through energy efficiency and renewable materials". (*Connecting to Success*).

There is currently limited data on scale of the low carbon and environmental goods and services sectors in the West Midlands. However, estimates of the size of the sectors in the West Midlands are contained in the national report for Department for Business, Enterprise and Regulatory Reform (BERR)'s *Low Carbon* and *Environmental Goods and Services: an industry analysis* (Innovas, 2009). This Innovas Report provides a regional breakdown of data (though uncertainty exists over the accuracy of these figures which are thought by a number of commentators to overstate the size of the sector) and forecasts the market and employment in the Low Carbon and Environmental Goods and Services sector in the West Midlands will grow as summarised in *Figure 6.1* and *Figure 6.2.*

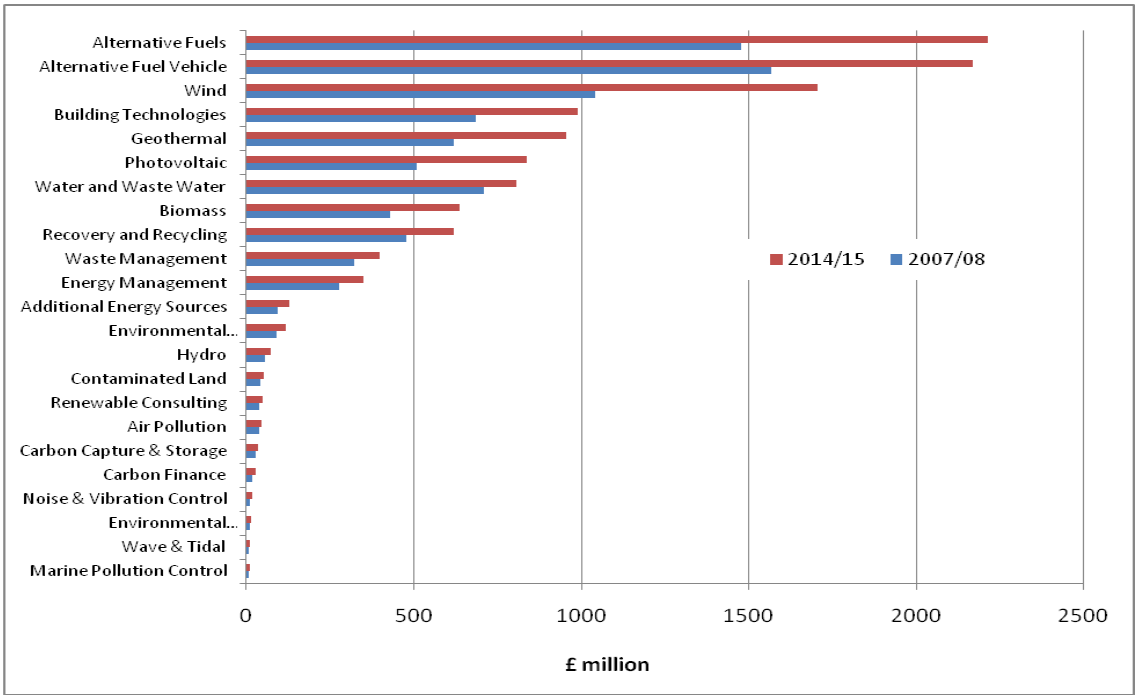
According to Innovas, there are an estimated 4,179 low carbon and environmental goods and services (LCEGS) companies in the West Midlands, employing 74,000 employees, and with a turnover of £8.55 billion in 2007. It estimates that the West Midlands has an 8% share of the UK market for low carbon and environmental goods and services.

Figure 6.1 Employment, market value and current growth rates for sub-sectors in the Low Carbon and Environmental goods and services sectors in the West Midlands



Source: Innovas for BERR, (March 2009). Note: Current market value is represented by the size of the bubble.

Figure 6.2 Forecast West Midlands LCEGS market value to 2014/15



Source: Estimates based on Innovas data (2009). Note: The forecasts are based on Innovas forecasts for UK market growth - regional level forecasts by sub-sector are unavailable.

As noted above, whilst many commentators caution that the Innovas figures are overestimates, separate research commissioned by AWM and WMRO (Environmental technologies skills review: key findings, issues and recommendations – WMRO, October 2009) confirms that the environmental sectors in the West Midlands have grown significantly over recent years - despite the downturn - and that businesses forecast continued further growth in the face of strong market drivers, such as rising energy and waste disposal costs, policies for all new homes to be zero carbon emissions by 2016, as well as waste reduction and recycling targets.

The economic opportunities arising from the shift to low carbon and the implications for business models extend across the West Midlands economy. The Carbon Trust report, *Climate Change - a Business Revolution* (2008) also 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.

In the light of opportunities and threats associated with climate change, the WMRO commissioned the report *Low Carbon Economy in the West Midlands* (March 2010, by Atkins). This identified the following eight broad sectors in the West Midlands with the greatest opportunity for growth in a low carbon economy as summarised in Table 6.1.

Table 6.1: Broad sectors of the West Midlands with greatest opportunities for low carbon growth

Low Carbon Opportunity Sector	Drivers of opportunities
• Manufacture of non-metallic mineral goods (e.g. Building Products: glass, ceramics etc.)	• Regulation will drive the move towards low carbon building products across the UK.
• Manufacture of automotive and transport equipment	• Reducing carbon footprint and sector regulation likely to force it to adapt in future. Huge potential market and strong manufacturing strengths in the West Midlands.
• Manufacture of metals and fabricated metal products and electrical equipment (e.g. Energy generation products/ Energy efficiency components)	• Driven by need to decarbonise operations, the West Midlands has a strong legacy of manufacturing machinery and electrical components.
• Construction	• Regulation will drive the move towards low carbon buildings
• Environmental goods and services (e.g. End-of-life vehicles recycling).	• Central aspect to the low carbon economy but many aspects begun already (e.g. Brownfield land regeneration, waste sites etc.).
• Manufacture of food and beverages (including farming)	• Opportunities in sustainable food chains and food technology.
• Transport, storage and communications	• Will be affected strongly by regulation but solutions more likely to come in terms of decarbonising existing activities rather than new products/services.
• Public Services	• The West Midlands is well placed to influence procurement practices and promote sustainable development.

This WMRO report by Atkins also identified priority actions to support development of the low carbon economy in the West Midlands. These include:

- Use of public sector procurement to stimulate demand for low carbon and environmental goods and services (e.g. by adopting sustainable construction standards, smart metering etc.).

- Investment in the West Midlands' infrastructure – e.g. low carbon transport, low carbon energy generation.
- Support and promote low carbon energy production such as biomass and combined heat and power.
- Promoting microgeneration (small scale renewable and low carbon energy production).
- Engagement with businesses to raise business awareness of opportunities in the low carbon economy – for new businesses and diversification of existing businesses.
- Support for low carbon skills development within businesses – including general science, technology, engineering and maths (STEM) skills, electrical engineering and specialist skills in areas such as renewable energy installation.
- Support with innovation to develop new products and services.
- Develop innovation networks between businesses and universities.
- Supply chain development activities to help business access supply opportunities in areas such as renewable energy, recycled products and low carbon building products (e.g. the new Renewable Energy Supply Chain Opportunities, RESCO project).
- Signposting business in the low carbon and environmental sectors to generic business support and support access to finance.
- Low carbon demonstration projects in areas such as sustainable construction.
- Support for the development of low carbon transport and automotive transport equipment.

A wide range of activities are underway across the West Midlands to help develop green jobs, examples are included in Box 6.1 below.

Box 6.1 Examples of activities to support development of green jobs in the West Midlands

- Supply chain development, e.g. RESCO and landfill diversion infrastructure supply chain initiatives.
- Actions within the Waste Infrastructure Development Programme.
- The work of AWM's Environmental Technologies Cluster Opportunity Group - EnviroTrade WM.
- Low carbon skills support is developing – e.g. Power Academy in Rugby and Wolseley Centre in Leamington Spa.
- The current drafting by AWM of the Regional Strategic Skills Priorities includes skills actions for the low carbon economy.
- Low Carbon Economic Area for advanced automotive engineering and the Centre of Excellence for Low Carbon and Fuel Cell Technologies (CENEX) in Coventry.
- Electric vehicle charging network projects such as CABLED.
- Green New Deal (housing retrofit in Birmingham).
- SWM activities to support the city region and Local Authorities in developing the low carbon economy.
- Sub-regional initiatives supported by AWM such as Re:Think Energy and the Marches Environmental Technology Network.
- Environmental business networks such as the Midlands Environmental Business Company (MEBC).
- UKTI and inward investment activities.
- Resource and energy efficiency support to businesses – integrating within the Business Link model, NISP, WRAP, Carbon Trust.

Documents and data reviewed – Low carbon jobs:

- *Low Carbon and Environmental Goods and Services: an industry analysis* (Innovas, for BERR, 2009).
- *Climate Change - a Business Revolution* – Carbon Trust (2008)
- *Low Carbon Economy in the West Midlands* (WMRO, prepared by Atkins, March 2010)
- Business Link West Midlands Resource Efficiency Programme

- AWM Waste Infrastructure Development Programme
- Innovation Dashboard - Measuring Regional Innovation, December 2009
- The West Midlands Economic Strategy (WMES)
- UK Low carbon Industrial Strategy – BERR 2009
- UK Manufacturing Study – BERR 2009
- Environmental technologies skills review: key findings, issues and recommendations, (WMRO October 2009)

Additional Overarching documents reviewed:

- Challenge or Opportunity? How to Plan for Climate Change: A State of the Region Thematic Report, West Midlands Regional Observatory, November 2009
- West Midlands Regional Climate Change Action Plan, AWM and Partners, December 2007
- West Midlands Regional Spatial Strategy (RSS) – including Phase 2 Preferred Options; Phase 3 Revisions
- WMRSS Monitoring report (Feb 2010)
- West Midlands Regional Sustainable Development Framework
- Evidence of Success: Developing the UK's first low-carbon regional economic strategy, AWM
- Understanding the West Midlands' Carbon Gap (March 2009)
- Decoupling into a low carbon Economy (WMRO, March 2009)
- West Midlands Low carbon Vision 2020 (Forum for the Future, for SWM - April 2009)
- Climate Change Action Plan Monitoring Report, WMRO April 2010
- West Midlands Economic Strategy Monitoring Framework, WMRO May 2010