



West Midlands  
Regional  
Observatory

[www.wmro.org](http://www.wmro.org)

# West Midlands Climate Change Action Plan

## Monitoring Report

26 April 2010

investing  
in your future  
European Regional Development Fund  
European Union



European Union  
European Social Fund  
Investing in jobs and skills



# West Midlands Climate Change Action Plan Monitoring Report

Version 1.0  
26 April 2010

Research Team  
West Midlands Regional Observatory  
Level 3, Millennium Point  
Curzon Street  
Birmingham  
B4 7XG

Telephone: 0121 202 3250  
Email: [info@wmro.org](mailto:info@wmro.org)  
Web: [www.wmro.org](http://www.wmro.org)

# Table of contents

<b>TABLE OF CONTENTS.....</b>	<b>3</b>
<b>1 INTRODUCTION.....</b>	<b>4</b>
<b>2 SUMMARY OF INDICATORS .....</b>	<b>5</b>
<b>3 REGIONAL INDICATORS .....</b>	<b>6</b>
3.1 Total energy consumption.....	6
3.2 Domestic energy consumption.....	8
3.3 Carbon dioxide (CO <sub>2</sub> ) emissions .....	9
3.4 Energy intensity .....	11
3.5 Electricity consumption.....	12
<b>4 INDUSTRY.....</b>	<b>14</b>
4.1 Industry CO <sub>2</sub> emissions .....	14
4.2 Industry Energy Intensity .....	15
<b>5 COMMERCIAL AND PUBLIC SECTOR SERVICES.....</b>	<b>16</b>
5.1 Commerce and Public Sector CO <sub>2</sub> emissions .....	16
5.2 Commerce and Public Sector Energy Intensity.....	17
<b>6 HOUSEHOLDS .....</b>	<b>18</b>
6.1 Domestic CO <sub>2</sub> emissions.....	18
6.2 Domestic CO <sub>2</sub> emissions per capita .....	19
6.3 Average Standard Assessment Procedure (SAP) rating of homes .....	19
6.4 Homes not meeting Decent Homes Standards .....	20
6.5 Households in fuel poverty .....	22
<b>7 ROAD TRAFFIC .....</b>	<b>23</b>
7.1 Transport CO <sub>2</sub> emissions .....	23
7.2 Percentage of trips to work by car .....	24
7.3 Average annual mileage by car .....	24
7.4 Average number of car trips per person .....	25
<b>8 RENEWABLES .....</b>	<b>27</b>
8.1 Combined Heat & Power .....	27
8.2 Renewable electricity generation capacity .....	29
8.3 Generation of electricity from renewable sources.....	29
<b>APPENDIX A: ESTIMATION OF CO<sub>2</sub> EMISSIONS FOR INDUSTRY AND COMMERCE.....</b>	<b>32</b>
<b>APPENDIX B: ESTIMATION OF RENEWABLE ELECTRICITY CAPACITY UTILISED .....</b>	<b>33</b>
<b>FULL DOCUMENT INFORMATION .....</b>	<b>34</b>

# 1 Introduction

---

The Climate Change Action Plan was launched in December 2007 and identified a series of key actions for regional partners to help the West Midlands address the issues presented by climate change.

One of the actions identified was to monitor the region's performance against a series of indicators. To establish a set of indicators we began with those originally expressed in the Regional Energy Strategy, developed in 2004. In 2006 the West Midlands Regional Observatory produced a detailed monitoring report of the strategy. Last year we reviewed the indicators and updated them where appropriate.

This report presents the current position of the West Midlands across several indicators around energy, CO2 emissions, electricity, industry, households, transport and renewable energy.

In some cases the measures used in the Regional Energy Strategy are no longer available or have been improved. When possible, we have used proxy variables that can provide an indication of the performance of the region.

Similarly, when available, we have incorporated revisions in the official data. This means that the data presented in this report might be different to the one on previous reports.

## 2 Summary of indicators

Indicator (unit)	Baseline <sup>1</sup> (year)	Most up-to-date value (year)
<b>Regional Indicators</b>		
Total CO <sub>2</sub> emissions (Mt CO <sub>2</sub> )	44.3 (2005)	44.0 (2007)
Energy intensity (KWh/ £GVA)	2.2 (2002)	1.6 (2007)
Regional electricity consumption (GWh)	32, 845 (2002)	25,849 (2008)
<b>Industry</b>		
Industrial CO <sub>2</sub> emissions <sup>2</sup> (MT CO <sub>2</sub> )	4.5 (2005)	4.5 (2007)
Industrial and commercial energy intensity kWh / £GVA	0.7 (2003)	0.5 (2007)
<b>Commercial and Public Sector Services</b>		
Commerce and Public Sector CO <sub>2</sub> emissions <sup>2</sup> (MT CO <sub>2</sub> )	13.4 (2005)	13.4 (2007)
<b>Households</b>		
Domestic CO <sub>2</sub> emissions (MT CO <sub>2</sub> )	12.7 (2005)	12.4 (2007)
Domestic CO <sub>2</sub> per capita (T CO <sub>2</sub> )	2.4 (2005)	2.3 (2007)
Average SAP rating of homes	48.8 (2003)	49.5 (2006)
Local Authority dwellings that fall below the 'Decent Homes Standards' (%) <sup>3</sup>	-	23.8 (2008)
Households in fuel poverty (%)	6.7 (2003)	17.2% (2007)
<b>Road Traffic</b>		
Transport CO <sub>2</sub> emissions (MT CO <sub>2</sub> )	13.4 (2005)	13.3 (2007)
Trips to work by car (%)	78 (2002)	76 (2008)
Annual average mileage by car (miles)	3,588 miles (99/01)	3,820 miles (07/08)
Annual average number of car trips	413 (99/01)	460 (07/08)
<b>Renewables</b>		
CHP heat capacity installed (KWth)	2.4 (2005)	2.2 (2006)
CHP electrical capacity installed (KWe)	1.3 (2005)	1.4 (2006)
Renewable electricity generation capacity (MW)	165.9 (2003)	181.9 (2008)
Generation of electricity from renewable sources (GWh)	581.3 (2003)	696.5 (2008)

<sup>1</sup> The baseline indicators have been updated with revised figures (when available) so they do not match the figures in the baseline report

<sup>2</sup> Estimated using Department of Energy and Climate Change (DECC) CO<sub>2</sub> emissions and the Digest of United Kingdom Energy Statistics (DUKES)

<sup>3</sup> Proxy indicator introduced. There is no up-to-date data to track performance of the original indicator 'Homes not meeting Decent Homes Standard'. The value from the baseline year was omitted because it is not comparable with the proxy indicator introduced indicator.

### 3 Regional Indicators

The West Midlands Energy Strategy highlighted the following indicators to monitor the regional energy use and CO<sub>2</sub> emissions<sup>4</sup>:

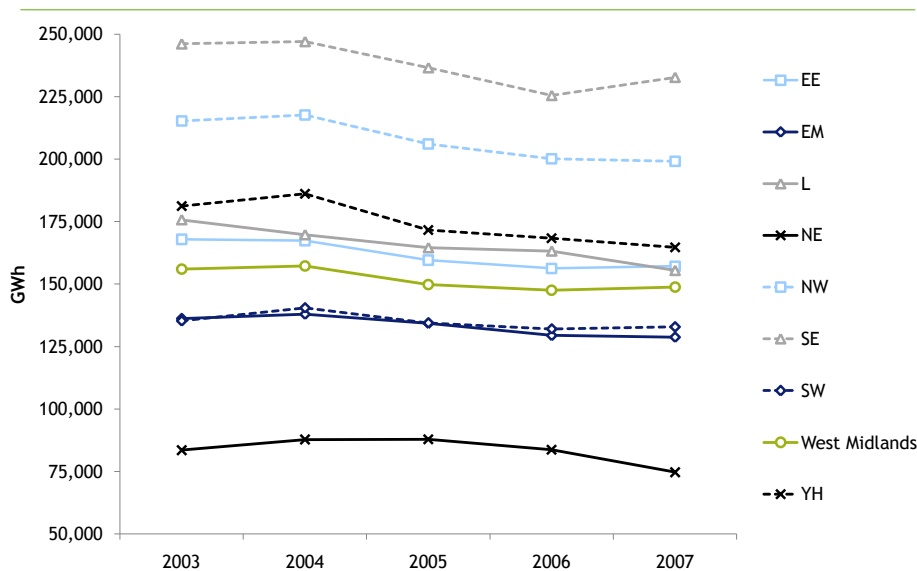
- Total energy consumption
- Domestic energy consumption
- CO<sub>2</sub> emissions
- Energy intensity
- Electricity consumption

In this section we review their performance over time and against the rest of the English regions. When available, we incorporated revisions in the official data. This means that the data will be different to previous reports.

#### 3.1 Total energy consumption

The energy consumption in the West Midlands fell between 2003 and 2007 from 155,993 GWh to 148,755 GWh. In 2007, the West Midlands had the 4<sup>th</sup> lowest energy consumption level as shown in Figure 1. The South East had the highest level (232,796 GWh) and the North East had the lowest one (74,643 GWh).

Figure 1. Total energy consumption



Source: DECC, Total final energy consumption at regional level

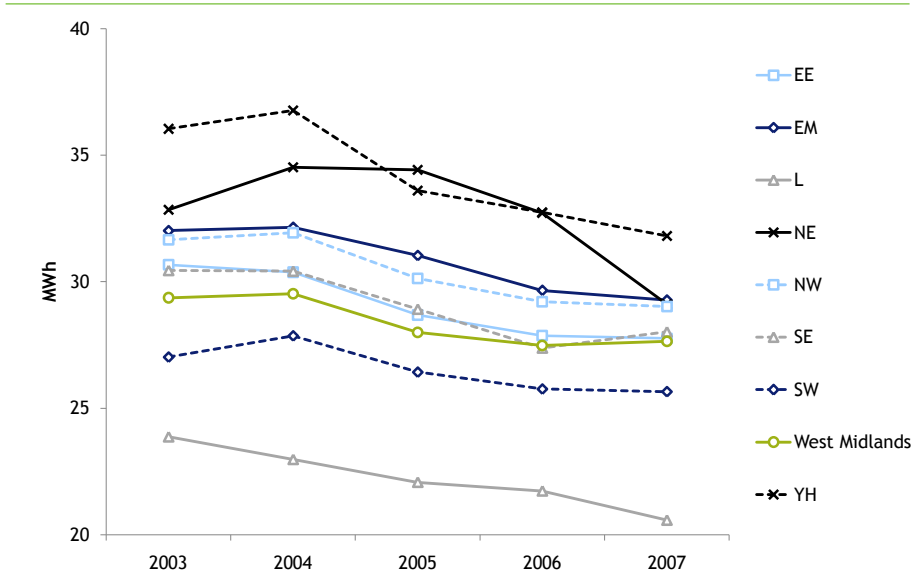
West Midlands Regional Observatory 2010

Between 2003 and 2007 the West Midlands' energy consumption fell 4.6 per cent. Compared to the rest of the regions, this reduction was the second lowest. London achieved the highest reduction (11.5 per cent) while the South West had the lowest one (only 1.8 per cent reduction).

Since the population of the region affects the level of energy used, we have included the energy consumed per person. For the West Midlands, the consumption of energy per person fell from 29.4 MWh in 2003 to 27.6 MWh in 2007 (see figure 2). In 2007, London was the best performing region with 20.6 MWh per person of energy consumption and Yorkshire and the Humber was the worst performing region with 31.8 MWh per person of energy consumed.

The West Midlands achieved a reduction of 5.9 per cent between 2003 and 2007. However, this was just the second lowest reduction compared with the rest of the English regions. London achieved the highest reduction (13.8 per cent) reduction and the South West at the other end of the scale had a reduction of 5.1per cent.

Figure 2. Total energy consumption per person



Source: DECC, Total final energy consumption at regional level West Midlands Regional Observatory 2010

The type of fuel used is another important variable we have included in the analysis. Understanding the energy consumption by type of fuel can help preparing for mitigation against climate change<sup>5</sup>.

Figure 3 shows the energy consumption by fuel type in 2007. The regions are arranged by level of energy consumption. The South East has the highest level and the North East has the lowest.

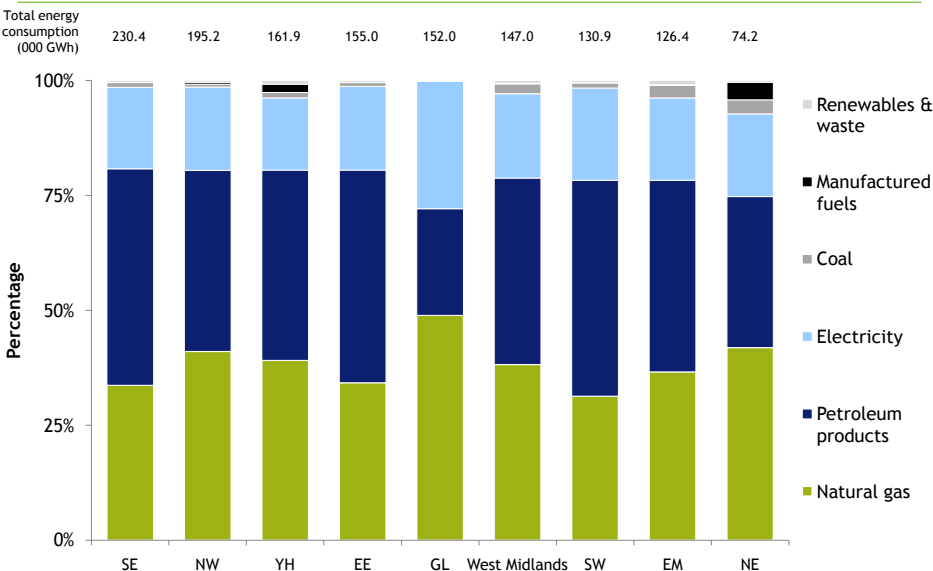
<sup>4</sup> West Midlands Regional Assembly, Advantage West Midlands and Government Office for the West Midlands (2004) *West Midlands Regional Energy Strategy*, pp. 10-11

In the West Midlands, the main types of fuel used are Petroleum Products (41 per cent) and Natural Gas (39 per cent). These two types of fuel also represent the main types across the rest of the regions. Both fuels account for more than 70 per cent of the energy consumption across the rest of the regions.

London has the highest proportion of energy consumption through electricity (27.8 per cent). The West Midlands has the third highest proportion (18.3 per cent) and the South West has the lowest.

The proportion of energy consumption through renewable energy is still less than 1 per cent across all the regions. The current level in the West Midlands is 0.57 per cent. The region with the highest proportion is the East Midlands with 0.98 per cent. London is the region with the lowest proportion with just 0.08 percent.

**Figure 3. Total energy consumption by fuel type, 2007**



Source: DECC, Total final energy consumption at regional level by fuel type West Midlands Regional Observatory 2010

### 3.2 Domestic energy consumption

In 2007, natural gas was still the main fuel used in domestic energy consumption. It accounted for at least 70 per cent across almost all the regions. For the South West it only accounted for 62 per cent of the domestic energy consumption.

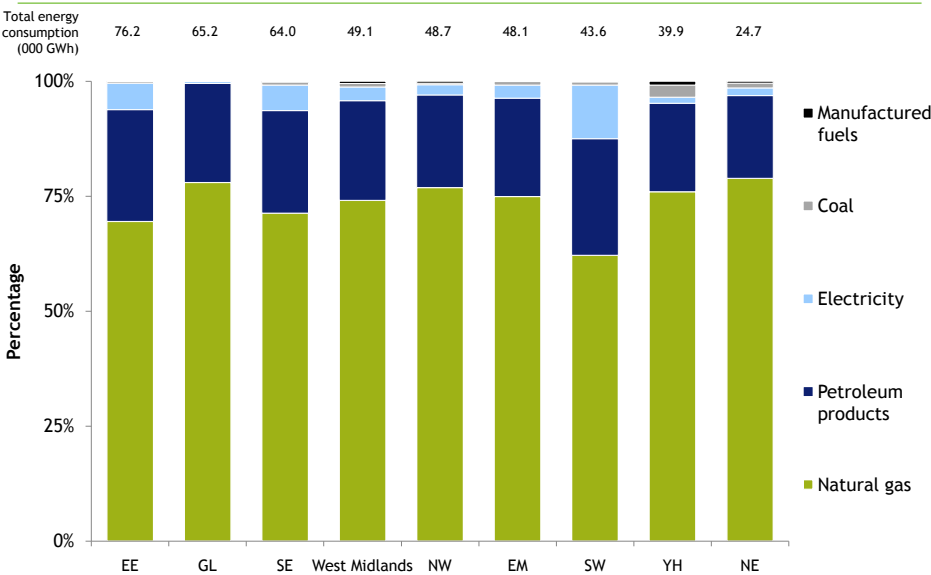
Figure 4 shows the domestic energy consumption by fuel type in 2007. The regions are arranged by level of domestic energy consumption. The East of England has the highest and the North East had the lowest.

<sup>5</sup> West Midlands Regional Observatory (2009) West Midlands Climate Change Action Plan Targets & Monitoring - TM1 Stage 2, p. 13.

In the West Midlands, 74 per cent of the domestic energy consumption was through natural gas (the fourth lowest proportion in England) and 22 per cent was through electricity ( the third highest in England).

Similarly as last year, the use of renewable energy is still not available at domestic level due to the low proportion.

**Figure 4. Domestic energy consumption by fuel type, 2007**



Source: DECC, Total final energy consumption at regional level by fuel type West Midlands Regional Observatory 2010

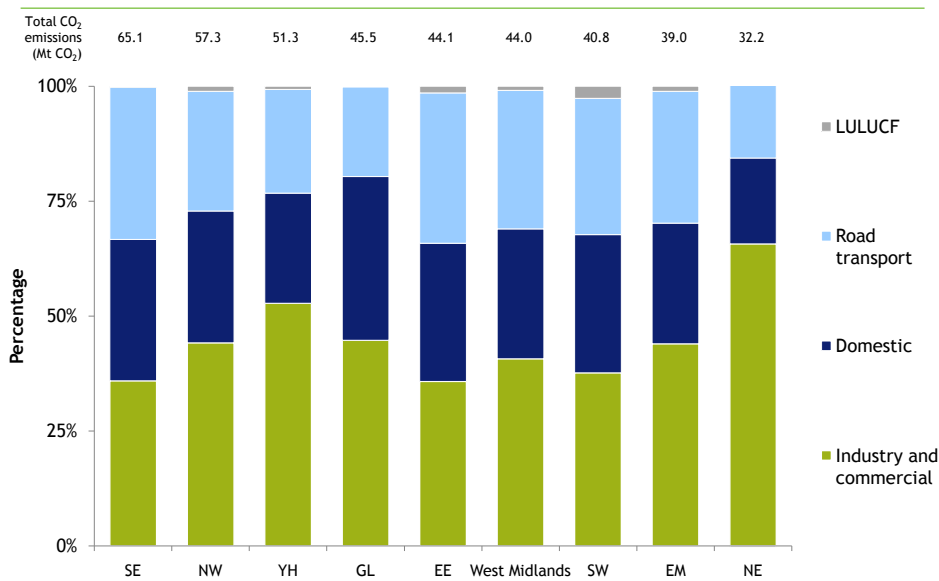
### 3.3 Carbon dioxide (CO<sub>2</sub>) emissions

In 2007, the West Midlands emitted 44 Mt of Carbon dioxide (CO<sub>2</sub>). This figure was the sixth highest level of CO<sub>2</sub> emissions of the English regions in 2007. Figure 5 shows the breakdown of the emissions by consumer sector. The regions are arranged by level of CO<sub>2</sub> emissions. The South East has the highest and the North East has the lowest.

In the West Midlands, the industrial and commercial sector makes the highest contribution to the region’s CO<sub>2</sub> emissions (40.7 per cent). The domestic sector contributes 28.3 per cent of the region’s emissions. Finally, road and transport is responsible for 30.2 per cent of the CO<sub>2</sub> emissions in the region.

In comparison with last year, the West Midlands reduced its CO<sub>2</sub> emissions by 1.5 per cent. In addition, the two main sectors (industrial and commercial and domestic) achieved a slight reduction on their emissions. The road transport sector on the other hand, increased its level of emissions.

**Figure 5. Total CO<sub>2</sub> emissions by consuming sector, 2007**

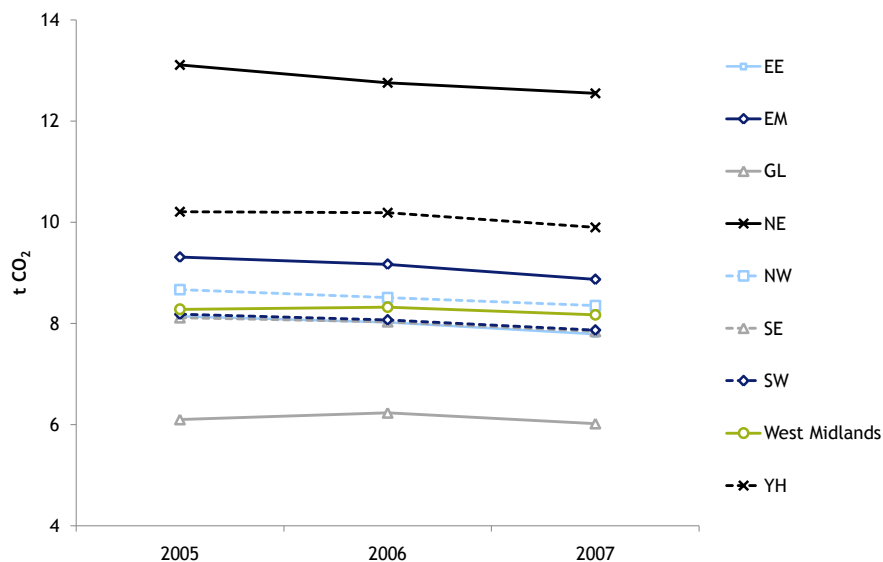


Source: DECC, Full local CO<sub>2</sub> emissions estimates

West Midlands Regional Observatory 2010

The level of CO<sub>2</sub> emissions per capita has declined between 2005 and 2007 across all regions. However, the West Midlands had the lowest reduction (same as Greater London), only 1.3 per cent. The East Midlands achieved the highest reduction (4.7 per cent) for the same period.

**Figure 6. CO<sub>2</sub> emissions per capita**



Source: DECC, Full local CO<sub>2</sub> emissions estimates

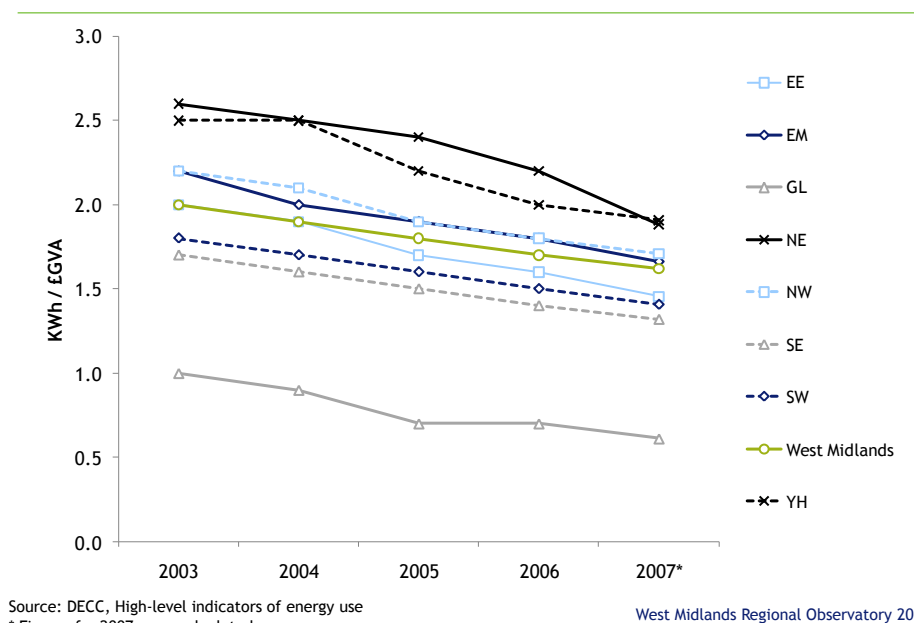
West Midlands Regional Observatory 2010

### 3.4 Energy intensity

Energy intensity is the ratio of final energy consumption of a sector and the gross value added (GVA) generated by that sector. The use of GVA is useful because it allows having some common measure of output to compare with energy consumption.

For energy intensity a lower value would represent that there is a greater output per unit of energy input. This suggests greater energy efficiency. Figure 7 shows that all regions have achieved greater energy efficiency since 2003.

Figure 7. Energy intensity

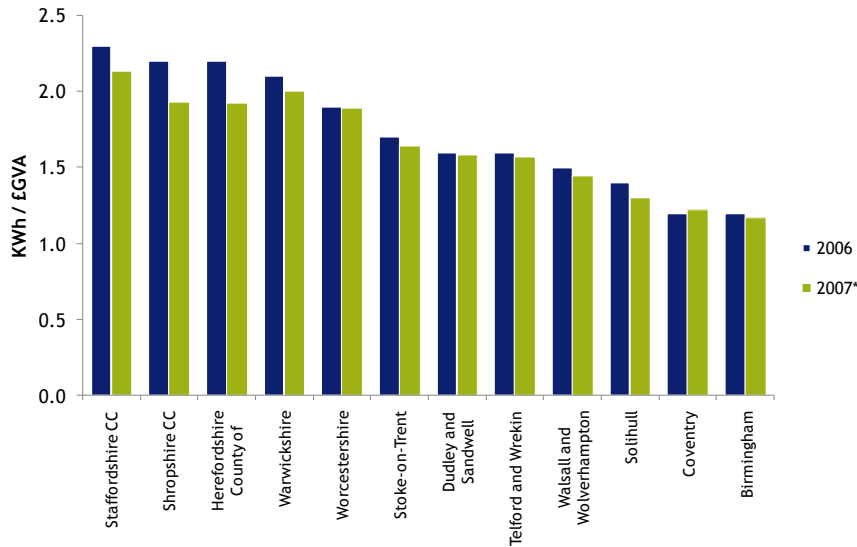


The West Midlands is at the middle of the ranking, Greater London is the most energy efficient region and Yorkshire and the Humber has the highest level of energy intensity.

It is also possible to monitor progress within the region at sub-regional (NUTS 3) level. Figure 8 shows the levels of energy intensity across the West Midlands. The figure highlights that the rural areas within the region tend to be more energy intensive (Staffordshire, Herefordshire, Shropshire and Warwickshire).

Solihull, Coventry and Birmingham are the areas with the highest levels of energy efficiency in the region. The levels of efficiency across the region were also improved across all the local authorities in the West Midlands.

**Figure 8. Energy intensity by NUTS3**



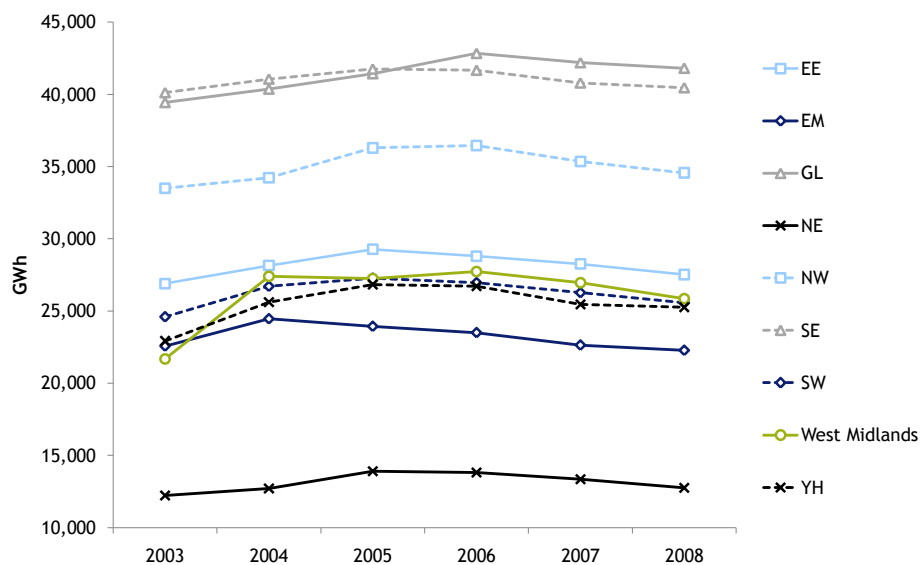
Source: DECC, High-level indicators of energy use  
\* Figures for 2007 were calculated

West Midlands Regional Observatory 2010

### 3.5 Electricity consumption

The level of electricity consumption in 2008 is still higher than in 2003 for almost all regions (East Midlands is the only one that reduced its electricity consumption - by 1.3 per cent for that period). It is important to mention that this dataset was produced as experimental in 2003 and 2004 and it became fully functional in 2005.

**Figure 9. Total electricity consumption**



Source: DECC, Electricity consumption at regional and local level

West Midlands Regional Observatory 2010

Figure 9 shows that since 2005 the levels have been declining in almost all the regions (the exception in this case is Greater London with an increase of 0.9 per cent). The West Midlands reduced its electricity consumption by 5.2 per cent since 2005.

Between 2007 and 2008 the West Midlands achieved the second highest reduction in electricity consumption (4.1 per cent). The North East was the region with the highest reduction (4.4 per cent) while Yorkshire and the Humber and the South East achieved the lowest reduction across the English regions (0.8 per cent).

## 4 Industry

The West Midlands Energy Strategy highlighted the following indicators to monitor the Industry sector performance<sup>6</sup>:

- Industry CO<sub>2</sub> emissions
- Industry energy intensity

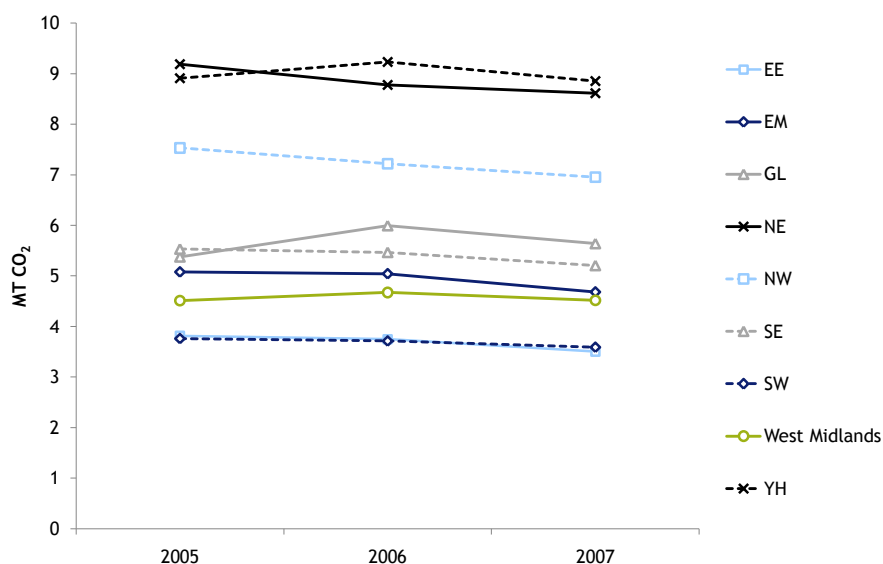
When available, we incorporated revisions in the official data. This means that the data will be different to previous reports.

### 4.1 Industry CO<sub>2</sub> emissions

The Department of Energy and Climate Change (DECC) only publishes data on CO<sub>2</sub> emissions for industry and commerce as a combined entity. We have produced an estimate weighting the data from the Digest of United Kingdom Energy Statistics (DUKES) on energy consumption by final user. We have included details of the estimation process in Appendix A.

Figure 10 shows the estimated CO<sub>2</sub> emissions from Industry. Between 2006 and 2007 all regions reduced their Industry emissions.

Figure 10. CO<sub>2</sub> emissions from Industry



Source: DECC, Full local CO<sub>2</sub> emissions estimates and DUKES

West Midlands Regional Observatory 2010

<sup>6</sup> West Midlands Regional Assembly, Advantage West Midlands and Government Office for the West Midlands (2004) *West Midlands Regional Energy Strategy*, p. 19

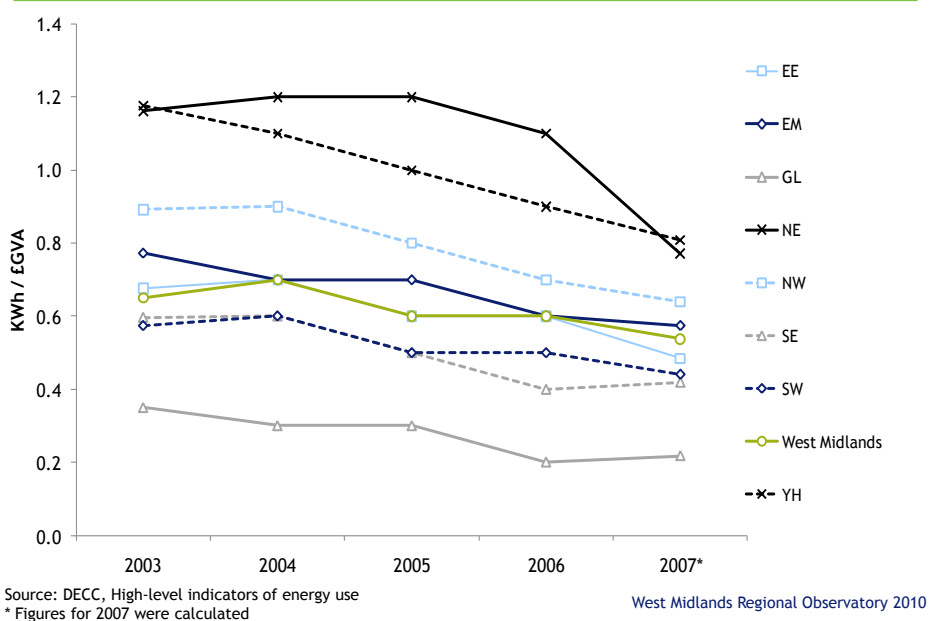
In 2007 the West Midlands had the third lowest level of industry emissions (4.5 MTCO<sub>2</sub>). The East of England had the lowest level with 3.5 MTCO<sub>2</sub> emissions and Yorkshire and the Humber had the highest level of industry emissions (8.9 MTCO<sub>2</sub>).

Between 2006 and 2007 the West Midlands achieved a 3.4 per cent reduction on its industry emissions. The East of England was the region with the highest reduction (6.6 per cent) while the North East had the lowest reduction (1.9 per cent).

## 4.2 Industry Energy Intensity

Energy intensity measures the energy used per pound of GVA. This indicator is produced by the Department of Energy and Climate Change (DECC) and as with the previous indicator, this is only produced for a combined measure of industry and commerce. We decided to use this indicator as a proxy for industry.

Figure 11. Industry & commerce energy intensity



All regions have become more energy efficient for the industry and commerce sectors between 2003 and 2007. However, the West Midlands improvement was the lowest compared to other regions (17 per cent). Greater London achieved a 38 per cent reduction.

## 5 Commercial and Public Sector Services

---

The West Midlands Energy Strategy highlighted the following indicators to monitor the Industry sector performance<sup>7</sup>:

- Commerce and Public Sector CO<sub>2</sub> emissions
- Commerce and Public Sector energy intensity

When available, we incorporated revisions in the official data. This means that the data will be different to previous reports.

### 5.1 Commerce and Public Sector CO<sub>2</sub> emissions

The Department of Energy and Climate Change (DECC) only publishes data on CO<sub>2</sub> emissions for industry and commerce as a combined entity. We have produced an estimate weighting the data from the Digest of United Kingdom Energy Statistics (DUKES) on energy consumption by final user. We have included details of the estimation process on Appendix A.

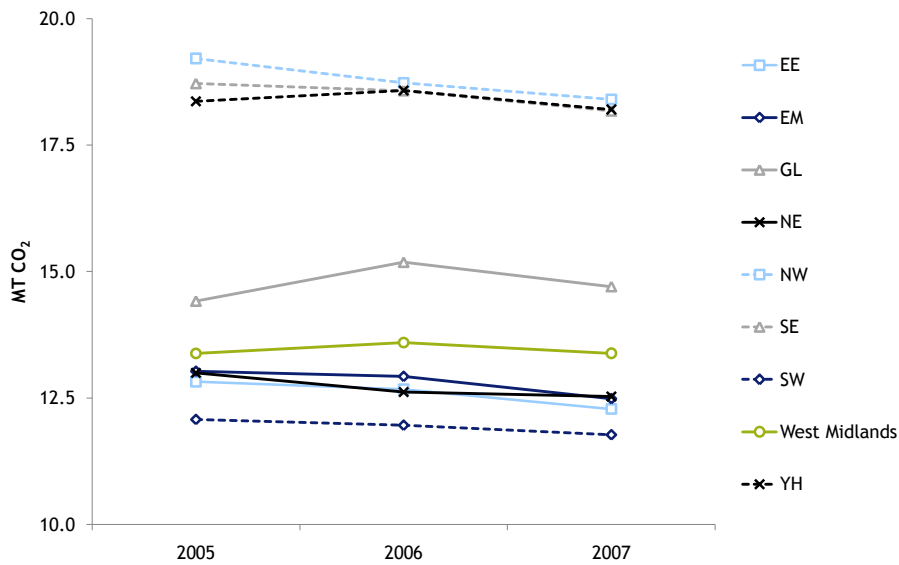
Figure 12 shows the estimated CO<sub>2</sub> emissions from commerce and public sector. Between 2006 and 2007 all the regions reduced their commerce and public sector emissions. In 2007 the West Midlands had the fifth lowest level emissions (13.4 MTCO<sub>2</sub>). The South West had the lowest level with 11.8 MTCO<sub>2</sub> emissions and the North West had the highest level of emissions (18.4 MTCO<sub>2</sub>).

Between 2006 and 2007 the West Midlands achieved a 1.6 per cent reduction on its commerce and public sector emissions. The East Midlands was the region with the highest reduction (3.4 per cent) while the North East had the lowest reduction (0.7 per cent).

---

<sup>7</sup> West Midlands Regional Assembly, Advantage West Midlands and Government Office for the West Midlands (2004) *West Midlands Regional Energy Strategy*, p. 19

Figure 12. CO<sub>2</sub> emissions from commerce and public sector



Source: DECC, Full local CO<sub>2</sub> emissions estimates and DUKES

West Midlands Regional Observatory 2010

## 5.2 Commerce and Public Sector Energy Intensity

In section 4.2 we highlighted that this indicator is produced by the Department of Energy and Climate Change (DECC) and it is only produced for a combined measure of industry and commerce. We used this indicator as a proxy (see section 4.2 or figure 11).

## 6 Households

The West Midlands Energy Strategy highlighted the following indicators to monitor the Industry sector performance<sup>8</sup>:

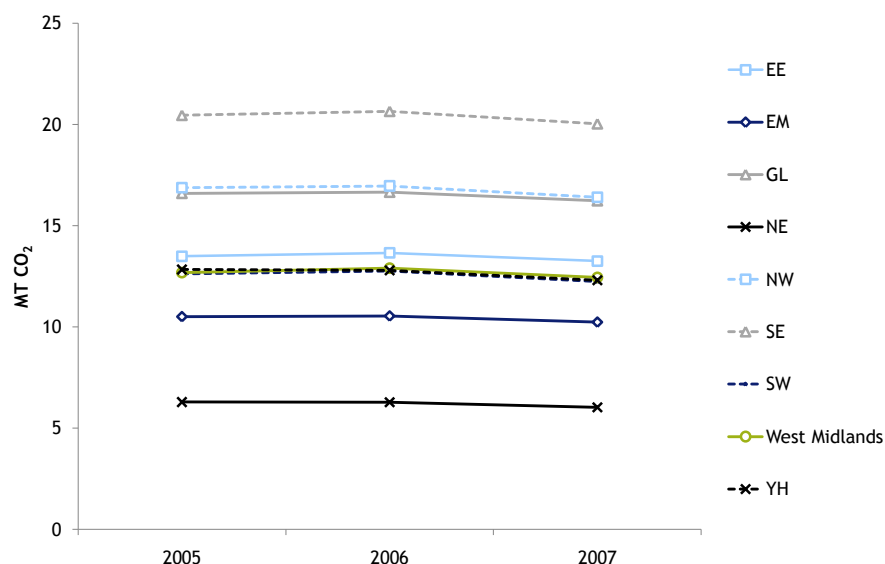
- Domestic CO<sub>2</sub> emissions
- CO<sub>2</sub> emissions per capita
- Average Standard Assessment Procedure (SAP) rating of homes
- Homes not meeting Decent Homes Standards
- Households in fuel poverty

When available, we incorporated revisions in the official data. This means that the data will be different to previous reports.

### 6.1 Domestic CO<sub>2</sub> emissions

Figure 13 shows that the level of domestic CO<sub>2</sub> emissions across all the regions has slightly decreased between 2005 and 2007. The West Midlands domestic emissions reduced 1.9 percent for the same period (from 12.7 MT CO<sub>2</sub> to 12.4 MT CO<sub>2</sub>).

Figure 13. Domestic CO<sub>2</sub> emissions



Source: DECC, Full local CO<sub>2</sub> emissions estimates

West Midlands Regional Observatory 2010

<sup>8</sup> West Midlands Regional Assembly, Advantage West Midlands and Government Office for the West Midlands (2004) *West Midlands Regional Energy Strategy*, p. 20

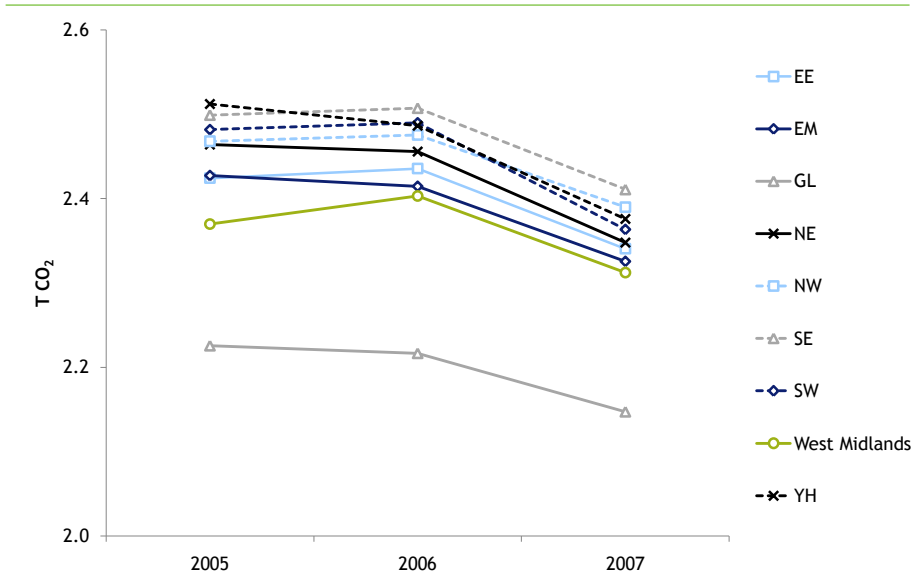
The North East was the region with the highest reduction (4.2 per cent) while the East of England was the region with the lowest reduction of only 1.8 per cent.

### 6.2 Domestic CO<sub>2</sub> emissions per capita

When we analyse the domestic CO<sub>2</sub> emissions per capita it is clear that the regions are moving in the right direction. Figure 13 shows that between 2006 and 2007 all the regions were able to reduce their emissions per capita by between three and five per cent.

The West Midlands reduced its domestic CO<sub>2</sub> emissions per capita by 3.8 per cent (from 2.4 TCO<sub>2</sub> in 2006 to 2.3 TCO<sub>2</sub> in 2007). The South West was the region achieving the highest reduction (5.1 per cent) and Greater London had the lowest reduction of 3.1 per cent.

Figure 13. Domestic CO<sub>2</sub> emissions per capita



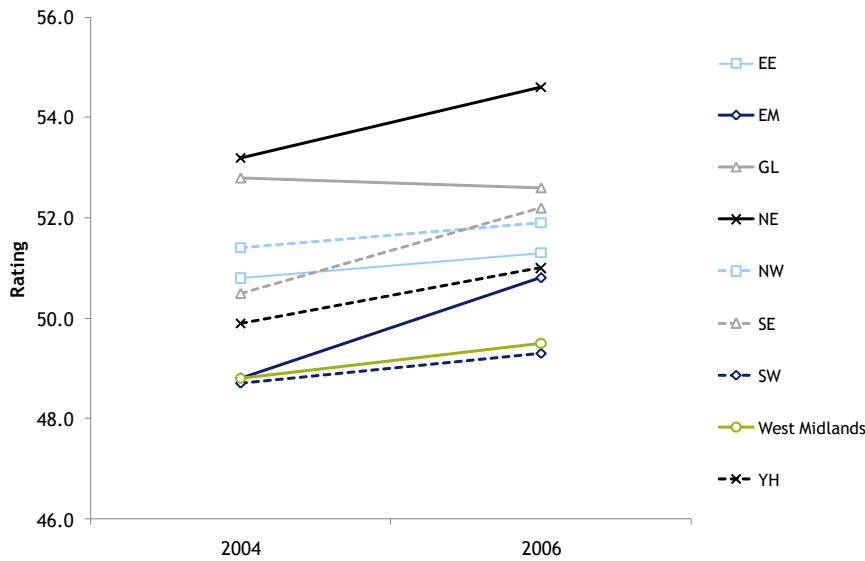
Source: DECC, Full local CO<sub>2</sub> emissions estimates

West Midlands Regional Observatory 2010

### 6.3 Average Standard Assessment Procedure (SAP) rating of homes

The Standard Assessment Procedure (SAP) is the Government’s recommended system for energy rating of dwellings. SAP provides a simple means of reliably estimating the energy efficiency performance of dwellings. SAP ratings are expressed on a scale of 1 to 100, the higher the number the better the rating.

Figure 14. Average SAP rating of homes



Source: DECC, High-level indicators of energy use

West Midlands Regional Observatory 2010

The West Midlands Average SAP rating in 2006 was 49.5. It showed a one per cent increase compared to 2004. Figure 14 shows that almost all regions increased in their SAP ratings between 2004 and 2006. The East Midlands was the region with the greatest increase (only 4 per cent).

Greater London was the only region that saw a minor reduction on the SAP rating, of 0.4 per cent (from 52.8 to 52.6)

## 6.4 Homes not meeting Decent Homes Standards

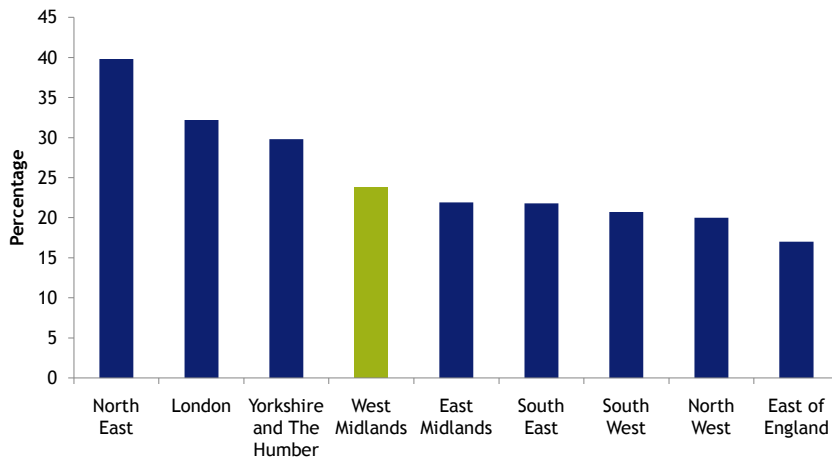
Communities and Local Government (CLG) defines ‘Decent Home’ as meeting four key criteria<sup>9</sup>:

- It meets the current statutory minimum standard for housing
- It is in a reasonable state of repair
- It has reasonably modern facilities and services
- It provides a reasonable degree of thermal comfort

The Decent Homes Standard applies to all social housing whether local authority or Registered Social Landlord owned.

<sup>9</sup> Communities and Local Government (2006) ‘A decent home: definition and guidance for implementation’

Figure 15. LA dwellings that fall below the Decent Home Standard, 2008



Source: Communities and Local Government

West Midlands Regional Observatory 2010

Since there is no up-to-date data for this indicator, we decided to use as proxy the percentage of local authority dwellings that fall below the ‘Decent Home Standard’. In 2008 the West Midlands was the region with the fourth highest percentage of local authority dwellings falling below the decent home standard (24 per cent). The North East had the highest level with 40 per cent and the South West was the lowest with only 17 per cent.

At a regional level this indicator is only available for 2008 so we were not able to assess performance over time. However, data by local authority in the West Midlands suggests that the trend of this indicator is moving in the right direction.

Table 1 shows the local authorities with dwellings falling below the Decent Home Standard between 2006 and 2008.

Table 1 Local Authority dwellings that fall below the ‘Decent Homes Standards’

Local Authority	2006	2007	2008
Birmingham	51%	34.5%	21.9%
Bridgnorth	13%	11%	6.9%
Cannock Chase	39%	32%	24.7%
Dudley	25%	17.2%	13.5%
North Shropshire	25%	16.9%	-
Local Authority	2006	2007	2008
Oswestry	85%	77.6%	74.2%
Sandwell	56%	44%	31%
Solihull	30%	22.2%	17.7%
Stoke-on-Trent	21%	24.6%	21.6%
Wolverhampton	51%	59.1%	-

## 6.5 Households in fuel poverty

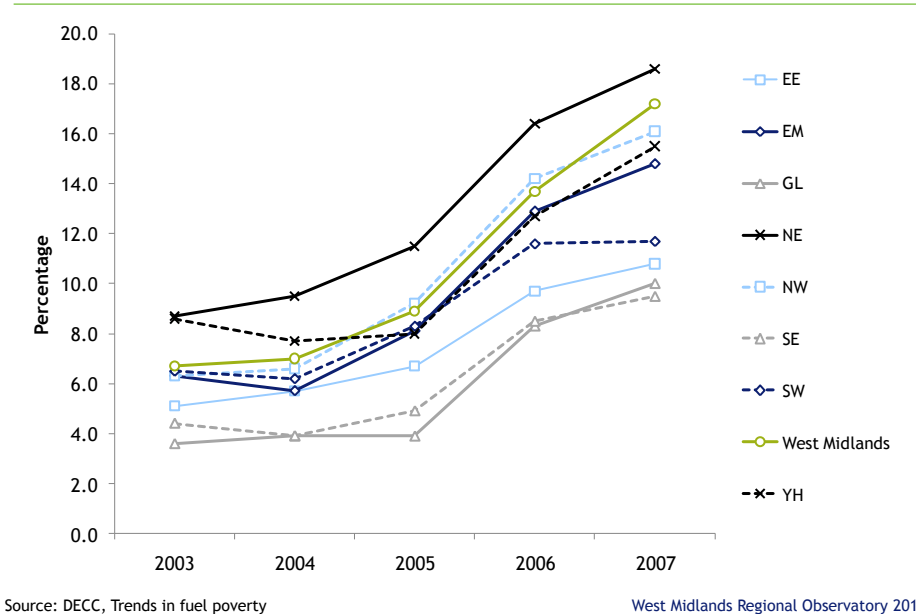
DECC define fuel poverty as ‘A household that needs to spend more than 10% of its income on fuel to maintain a satisfactory heating regime (usually 21 degrees for the main living area, and 18 degrees for other occupied rooms).’

The fuel poverty ratio is therefore defined as: Fuel poverty ratio = fuel costs (usage x price) ÷ income<sup>10</sup>.

Figure 16 illustrates that between 2003 and 2007 there was a significant increase in the proportion of households living in fuel poverty across all of the English regions. However it is also clear that between 2006 and 2007 all the regions grew at lower rates.

In 2003, 6.7 per cent of the West Midlands households lived in fuel poverty; by 2007 it was 17.2 per cent. This is the second highest proportion across the English regions. The North East is the region with the highest level of households in fuel poverty (18.6 per cent) while the South East is the lowest one with 9.5 per cent.

Figure 16. Households in fuel poverty



Between 2006 and 2007 the West Midlands had the greatest growth (26 per cent) of households living in poverty fuel, while the South West managed to keep its proportion with almost no change (1 per cent).

<sup>10</sup> [http://www.decc.gov.uk/en/content/cms/statistics/fuelpov\\_stats/fuelpov\\_stats.aspx](http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx)

# 7 Road Traffic

The West Midlands Energy Strategy highlighted the following indicators to monitor the Industry sector performance<sup>11</sup>:

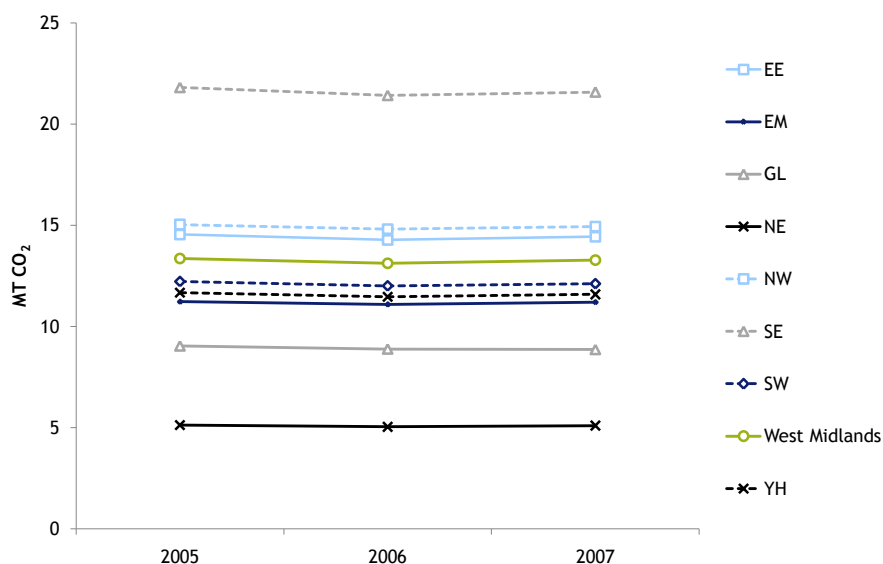
- Transport CO<sub>2</sub> emissions
- Percentage of trips to work by car
- Average annual mileage by car
- Number of trips by car

When available, we incorporated revisions in the official data. This means that the data will be different to previous reports.

## 7.1 Transport CO<sub>2</sub> emissions

The transport CO<sub>2</sub> emissions across all the regions have stayed at the same levels as in 2005. The South East is the region with the highest level of transport CO<sub>2</sub> emissions (21.6 MTCO<sub>2</sub>). The lowest level was achieved by the North East with 5.1 MTCO<sub>2</sub>. The West Midlands had the fourth highest level of emissions (13.3 MTCO<sub>2</sub>).

Figure 17. Road transport CO<sub>2</sub> emissions



Source: DECC, Full local CO<sub>2</sub> emissions estimates

West Midlands Regional Observatory 2010

<sup>11</sup> West Midlands Regional Assembly, Advantage West Midlands and Government Office for the West Midlands (2004) *West Midlands Regional Energy Strategy*, p. 20

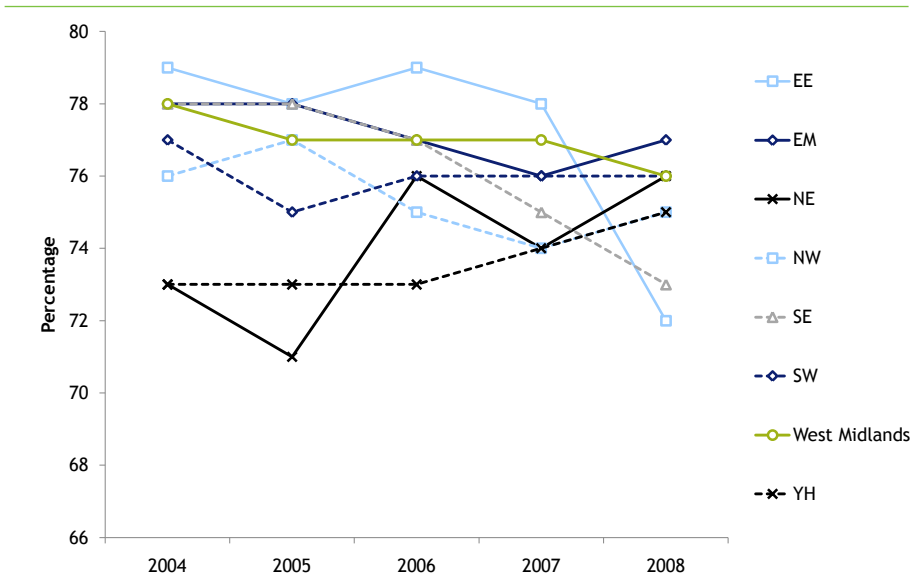
## 7.2 Percentage of trips to work by car

In 2008, 76 per cent of the West Midlands’ population used car as the main mode of travel to get to work. The rest of the regions, with the exception of London, had a similar proportion ranging between 72 per cent (East of England) and 77 per cent (East Midlands).

London had a significantly lower proportion, with only 35 percent of its population travelling by car to work. Its public transport system and the congestion charge are key factors behind this.

Figure 18 shows the trend that the proportion of people travelling by car has had since 2004 excluding London (which was excluded to improve the clarity of the chart). These figures are survey based estimates, hence the high volatility in the chart below.

Figure 18. Percentage of trips to work by car



Source: DfT, Personal travel regional data

West Midlands Regional Observatory 2010

Only four regions achieved a reduction of the proportion of people travelling by car to work between 2007 and 2008: West Midlands (1.3 per cent), South East (2.7 per cent), London (2.8 per cent) and East of England (7.7 per cent).

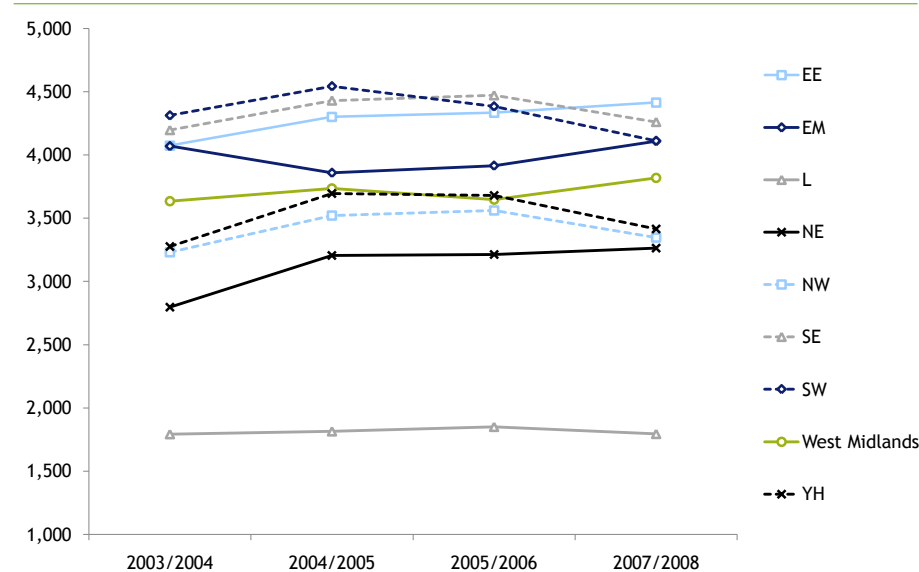
The North East was the region with the highest increase (2.7 per cent) of people travelling by car to work.

## 7.3 Average annual mileage by car

In 2007/2008 the average distance travelled by car in the West Midlands was 3,820 miles. This was the fifth highest mileage across the English regions. The East of England had the highest level with 4,416 miles and London was the region with the lowest average with 1,794 miles.

Figure 19 shows that between 2003/2004 and 2007/2008 the average annual mileage by car increased 5 per cent in the West Midlands. This increase was the third highest across the regions in England. The North East was the region with the highest increase (17 per cent) while the South West was the only region achieving a reduction (-5 per cent) on its average annual mileage by car.

**Figure 19. Average annual mileage by car**



Source: DfT, Personal travel regional data

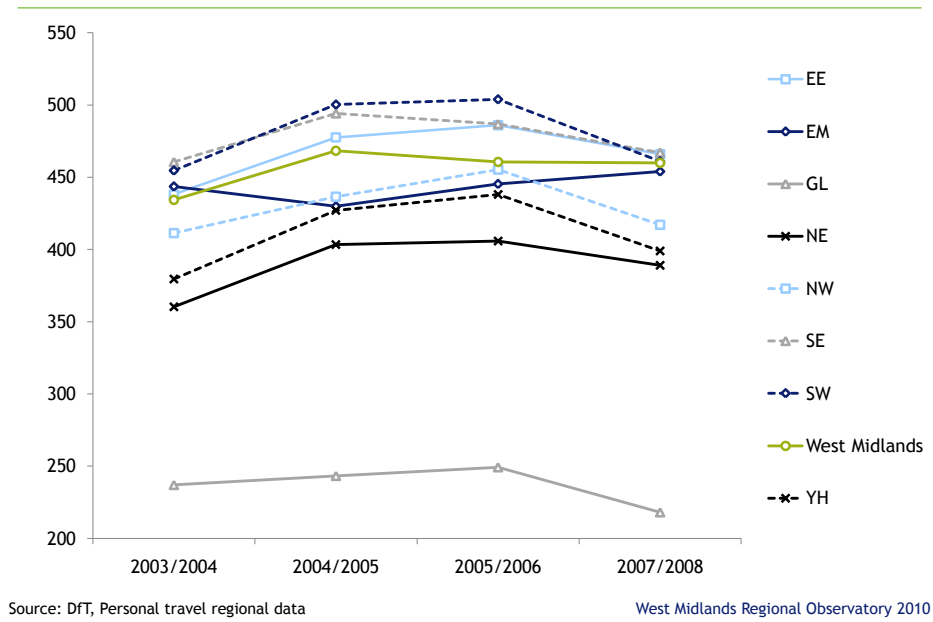
West Midlands Regional Observatory 2010

### 7.4 Average number of car trips per person

In 2007/2008 the average number of car trips per person in the West Midlands was 460. This was the third highest number across the English regions. The South East had the highest number (467) and London was the region with the lowest one (218).

Between 2003/2004 and 2007/2008 the average number of car trips per person increased 6 per cent in the West Midlands. This increase was the second highest across the regions in England. The North East was the region with the highest increase (8 per cent) while London was the only region achieving a reduction (-8 per cent) on the average number of car trips per person.

Figure 20. Average number of car trips per person



## 8 Renewables

---

The West Midlands Energy Strategy highlighted the following indicators to monitor the Industry sector performance<sup>12</sup>:

- Combined Heat & Power (CHP) capacity
- Renewable electricity generation capacity
- Generation of electricity from renewable sources

When available, we incorporated revisions in the official data. This means that the data will be different to previous reports.

### 8.1 Combined Heat & Power

Combined Heat and Power (CHP) is the simultaneous generation of usable heat and power (usually electricity) in a single process<sup>13</sup>. This technology provides financial and environmental benefits such as: reduction on emissions, a viable energy supply option and energy costs savings.

On-site or near-site heat generated by electricity production can be highly efficient, and the electricity produced can be used by the host producer to offset energy consumption. With the additional benefits of reduced emissions and the diversity of energy supply, CHP technologies offer a significant potential for meeting the energy strategy target<sup>14</sup>.

The Department of Energy and Climate Change produces figures for production of heat and electricity separately. Figures 21 and 22 show the capacity per £GVA to allow comparisons between regions.

The West Midlands has a low installed capacity for both electricity and heat generation. The North East, North West and Yorkshire and the Humber are the regions with the highest levels of CHP capacity in both, electricity and heat.

The West Midlands was the only region to show an increase in installed electricity capacity between 2005 and 2006.

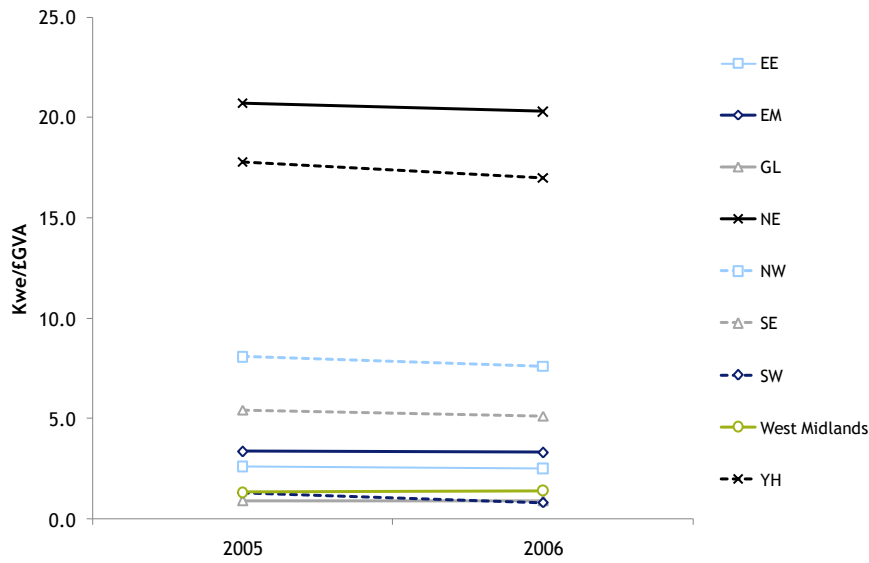
---

<sup>12</sup> West Midlands Regional Assembly, Advantage West Midlands and Government Office for the West Midlands (2004) *West Midlands Regional Energy Strategy*, p. 20

<sup>13</sup> <http://chp.decc.gov.uk/cms/chp-benefits/>

<sup>14</sup> West Midlands Regional Observatory (2009) *West Midlands Climate Change Action Plan Targets & Monitoring - TM1 Stage 2*, p. 34

**Figure 21. CHP electricity capacity installed**

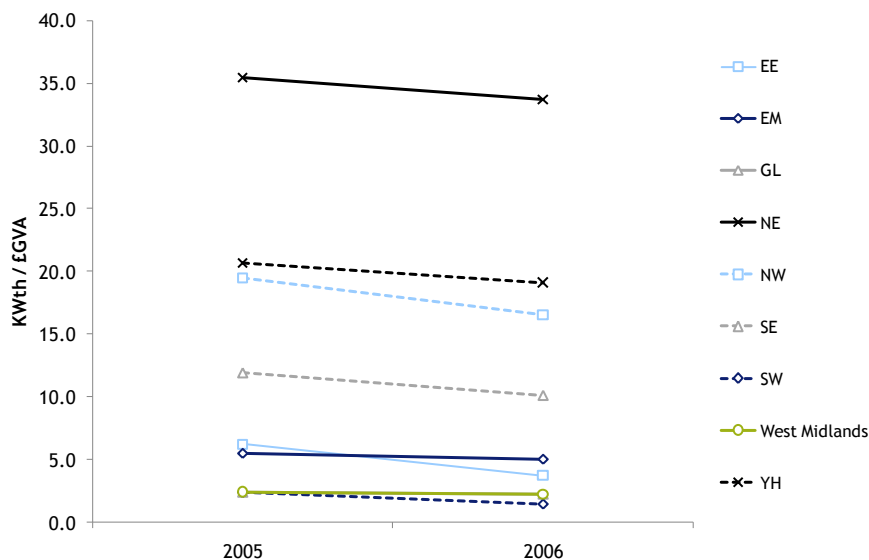


Source: DECC, High-level indicators of energy use

West Midlands Regional Observatory 2010

Regarding CHP heat capacity per pound of GVA, all regions showed a decline between 2005 and 2006. This can be explained by a small change in capacity and increase in regional GVA levels.

**Figure 22. CHP heat capacity installed**



Source: DECC, High-level indicators of energy use

West Midlands Regional Observatory 2010

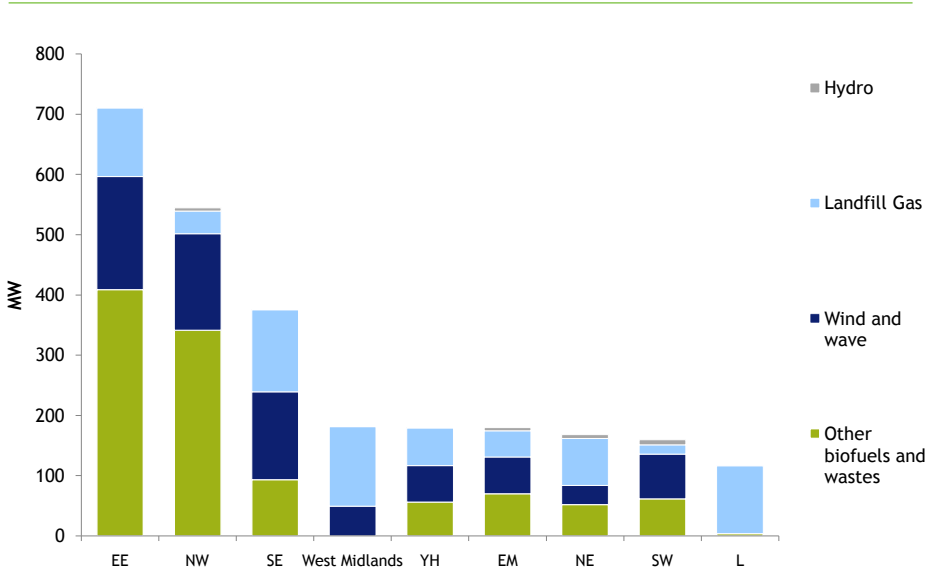
## 8.2 Renewable electricity generation capacity

The West Midlands has a renewable electricity generation capacity of 182 MW, the fourth highest of the English regions. The region with the highest renewable electricity generation capacity is the East of England with 771 MW.

The East of England produces 58 percent of its renewable electricity from wind and wave power. Not having a coast line is a clear disadvantage for the West Midlands.

The majority of the renewable electricity generation capacity in the West Midlands comes from other biofuels and waste (72 per cent). This is the second highest across the regions with London at the top with almost all its capacity coming from this source (97 per cent).

Figure 23. Renewable electricity generation capacity, 2008



Source: DTI, Energy trends

West Midlands Regional Observatory 2010

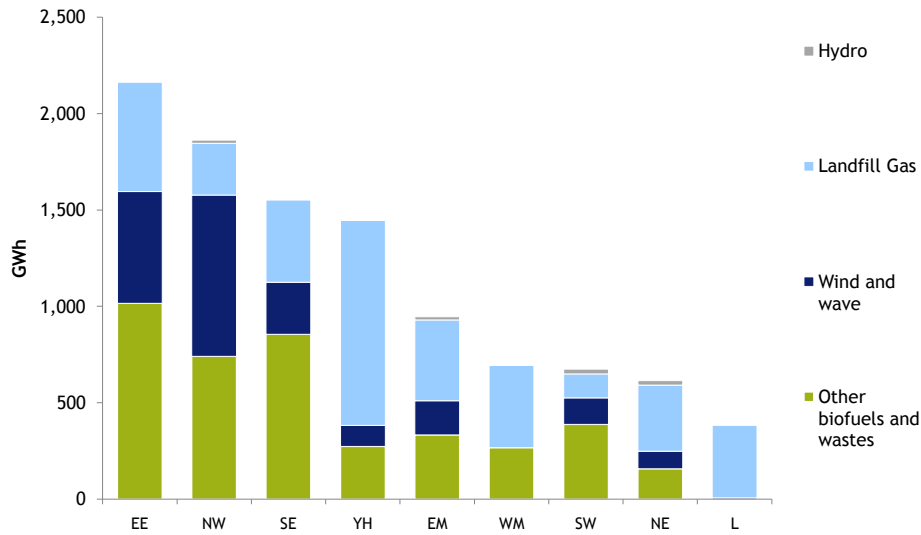
## 8.3 Generation of electricity from renewable sources

The West Midlands generates 697 GWh of electricity from renewable sources. This is the fourth lowest across the English regions. As mentioned in the previous section, the lack of a coastline represents a clear disadvantage for the region making the generation of electricity from offshore wind farms and wave sources impossible.

The East of England is the region with the highest electricity generation from renewable sources (2164 GWh) while London is at the other end of the scale with only 384 GWh of electricity produced from renewable sources.

In the West Midlands the majority of the electricity produced through renewable energy comes from other biofuels and waste (61 percent) and from landfill gases (38 percent).

**Figure 24. Generation of electricity from renewable sources, 2008**



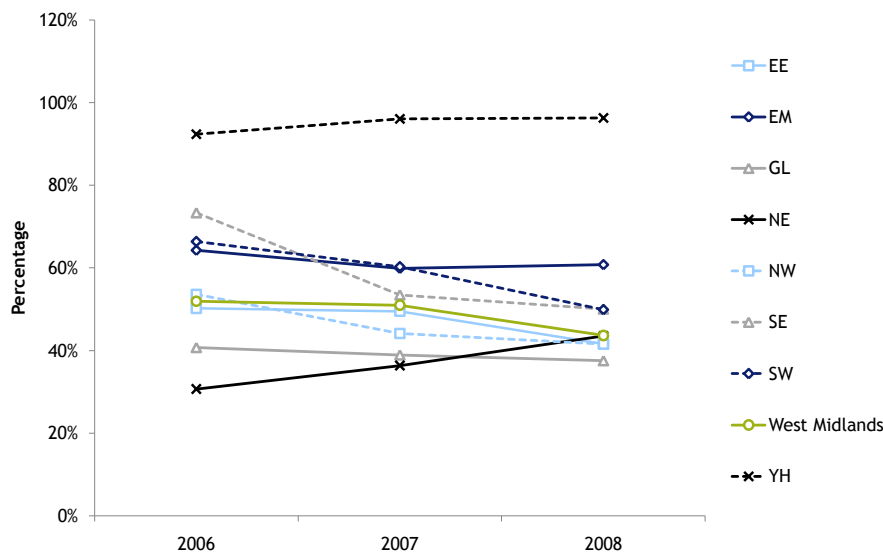
Source: DTI, Energy trends

West Midlands Regional Observatory 2010

Once we reviewed the available capacity and actual generation of electricity from renewable sources we believe it would be also beneficial to understand the proportion of the available capacity that is being used.

We took advice from the Department of energy and Climate Change on the best way to do this and details of the methodology are provided in Appendix B.

**Figure 25. Renewable electricity capacity utilised**



Source: DTI, Energy trends

West Midlands Regional Observatory 2010

The West Midlands is utilising 44 percent of its renewable electricity generation capacity. This is the third lowest of the English regions. The proportion utilised has declined since 2006. Even though this decline could be partly explained by the increase in capacity rather than a decline in usage, there have been some regions which have been able to increase both.

Yorkshire and the Humber has been able to utilise more than 90 per cent of its capacity since 2006. It increased from 92 percent in 2006 to 96 per cent in 2008. In addition this increase in capacity utilisation was achieved while also increasing the capacity installed.

# Appendix A: Estimation of CO<sub>2</sub> emissions for Industry and Commerce

---

The Department of Energy and Climate Change (DECC) only provides data on CO<sub>2</sub> emissions for industry and commerce as a combined entity. To estimate the industry and commerce shares of CO<sub>2</sub> emissions we weighted the figures according to the Digest of United Kingdom Energy Statistics (DUKES) data on energy consumption by final user (energy supplied basis) and adjusted it in line with the figures produced by DECC.

We calculated the proportion of energy consumption that industry and other final users (this includes agriculture, public administration and commerce) accounted for within the DUKES final energy consumption data.

We applied these weights to DECC's total CO<sub>2</sub> emissions data to see how the DUKES share of CO<sub>2</sub> emissions for industry and commerce compared to DECC's published figure.

Since the figures were lower we calculated the ratio of DUKES CO<sub>2</sub> emissions for industry and commerce to DECC's CO<sub>2</sub> emissions for industry and commerce. We then applied the ratio to the DUKES weightings to adjust them to the DECC data.

For example, in 2007 the North East's ratio of DUKES CO<sub>2</sub> emissions for industry and commerce to DEFRA's CO<sub>2</sub> emissions was 2.0 and the 2006 DUKES weight for industry was 20 per cent. The adjusted weighting for the North East was 0.4 (20 per cent of 2.0). We then multiplied DECC's CO<sub>2</sub> emissions for industry and commerce by the adjusted weighting for industry to get an estimate of CO<sub>2</sub> emissions produced by industry alone.

## Appendix B: Estimation of renewable electricity capacity utilised

---

In order to calculate the proportion of renewable electricity generation capacity that is being utilised, we first converted data on the installed capacity of sites generating electricity from renewable sources and electricity generation data into the same unit.

The data on installed capacity of sites generating electricity from renewable sources had to be converted from Megawatts into Megawatts hours. This involved multiplying the figures by the number of hours in a year (8,760).

We then converted the electricity generation data from Gigawatt hours to Megawatt hours, this involved multiplying it by 1,000.

Electricity generation data for a given year accounts for all electricity generated that year, whereas electricity generation capacity data is based on the capacity of a region at the end of a given year.

In order to give a more accurate impression of the proportion of available electricity capacity utilised, the Department for Climate Change recommended that we divide total energy generation for the most recent year (2008) by an average of the electricity generation capacity of the most recent year and previous year (i.e. 2007 and 2008). This is because the electricity generated would be drawing on the capacity already in place, rather than that available at the end of the year.

The calculations are based on the load factor methodology used within the September 2008 edition of Energy Trends<sup>15</sup>. This approach assumes that electricity generators run at optimum output and continually for the whole year.

---

<sup>15</sup> BERR (2008) Energy Trends and Quarterly Energy Prices, Energy Markets Unit

## Full document information

---

Title	Climate Change Action Plan Monitoring Report 2009-2010
Date created	February 2010
Type	Report
Description	This report presents the current position of the West Midlands across several indicators around energy, CO2 emissions, electricity, industry, households, transport and renewable energy
Creator	Research Team West Midlands Regional Observatory
Publisher	West Midlands Regional Observatory Level 3, Millennium Point Curzon Street Birmingham B4 7XG  Telephone: 0121 202 3250 Fax: 0121 202 3240 Email: <a href="mailto:info@wmro.org">info@wmro.org</a> Website: <a href="http://www.wmro.org">www.wmro.org</a>
Contributor	Susana Flores; John Walker and Naomi Winchurch
Rights	West Midlands Regional Observatory 2009
Document contact	Susana Flores Research Team West Midlands Regional Observatory Tel: 0121 202 3283 Email: <a href="mailto:susana.flores@wmro.org">susana.flores@wmro.org</a>
Location	West Midlands Regional Observatory
Coverage, Time period	2001 - 2008
Coverage, Geographical	West Midlands Region
Format	Text/MS Word 2003
Subject category	Energy; climate change; electricity; fuel; carbon; CO2; monitoring; energy strategy
Subject keywords	Energy; climate change; electricity; fuel; carbon; CO2; monitoring; energy strategy
Date available	2010-04-26
Access restrictions	Read only
Language	English
Identifier URL	<a href="#">Climate-Change-Action-Plan-monitoring_2009-10_V1.0_Report_JW.doc</a>
Status	Version 1.0 - for web publication (April 2010)



West Midlands  
**Regional  
Observatory**

[www.wmro.org](http://www.wmro.org)

**West Midlands Regional Observatory**

Level 3  
Millennium Point  
Curzon Street  
Birmingham B4 7XG

Telephone: 0121 202 3250  
Fax: 0121 202 3240  
email: [info@wmro.org](mailto:info@wmro.org)

[www.wmro.org](http://www.wmro.org)