



West Midlands  
Regional  
Observatory

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

# West Midlands Greenhouse Gas Emissions 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 Greenhouse Gas Emissions 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: [enquiries@wmro.org](mailto:enquiries@wmro.org)  
Web: [www.wmro.org](http://www.wmro.org)

# Table of contents

TABLE OF CONTENTS.....	3
1 INTRODUCTION.....	4
1.1 Why is this important to regional policy?.....	5
2 GREENHOUSE GAS EMISSIONS BY INDUSTRY .....	6
2.1 Greenhouse gas emissions produced by industries.....	6
3 GREENHOUSE GAS EMISSIONS FROM ENERGY USE .....	10
3.1 Greenhouse gas emissions from electricity use .....	10
3.2 Greenhouse gas emissions from gas use .....	12
4 CARBON DIOXIDE EMISSIONS .....	14
4.1 Carbon dioxide emissions per head.....	14
4.2 West Midlands carbon dioxide emissions by consuming sector .....	16
4.3 Comparing carbon dioxide emissions with other regions .....	19
4.4 Carbon dioxide emissions by Gross Value Added (GVA) .....	24
5 NEXT STEPS.....	27
5.1 Greenhouse gas emissions by Gross Value Added (GVA) .....	27
FULL DOCUMENT INFORMATION .....	28

# 1 Introduction

---

This report monitors Greenhouse Gas emissions in the West Midlands. Measuring greenhouse gas emissions<sup>1</sup> helps us to address climate change. Quantifying greenhouse gas emissions in the West Midlands will help to identify where efficiencies can be made. This will help us move towards a low carbon economy.

The UK has both international (Kyoto Protocol) and domestic (Climate Change Act 2008) targets to reduce greenhouse gas emissions. The West Midlands will need to make efficiencies to help achieve these reductions.

Previous monitoring work has focused on carbon dioxide emissions. This is because carbon dioxide is the most common greenhouse gas and accounts for 85% of all emissions. However, carbon dioxide is less harmful than other greenhouse gases so it is important to monitor these too.

The Kyoto protocol defines other greenhouse gases as: methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. Sulphur hexafluoride is the most harmful greenhouse gas, but emissions are low. Although carbon dioxide is the least harmful greenhouse gas, emissions are high.

Table 1 shows the global warming potential of each greenhouse gas. Gases with longer lifetimes are most harmful to the environment<sup>2</sup>. The effect a greenhouse gas has on the environment also changes depending on the amount of time it's in the atmosphere for.

**Table 1 - Global warming potential greenhouse gas emissions**

Greenhouse gas	Lifetime (years)
Carbon dioxide	1
Methane	12
Nitrous oxide	114
HFC-23 (hydrofluorocarbon)	270
HFC-134a (hydrofluorocarbon)	14
Sulphur Hexafluoride	3,200

*Source: 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report*

---

<sup>1</sup> DEFRA Guidance on how to measure and report your greenhouse gas emissions

<sup>2</sup> Further information on global warming potential is available from the [IPCC Third Assessment Report - Climate Change 2001](#)

Within this report, we measure greenhouse gas emissions in carbon dioxide equivalent. Emissions can be allocated to: areas where energy was produced, or areas where end users consumed the energy produced. This report looks at both.

## 1.1 Why is this important to regional policy?

The UK has a legally binding target under the Kyoto Protocol to reduce emissions of greenhouse gases by 12.5 per cent below 1990 levels by 2012. Through the Climate Change Act 2008 it has also set itself a more ambitious target to reduce greenhouse gas emissions by 80 per cent below 1990 levels by 2050, with an aim of achieving a 26 per cent reduction in carbon dioxide emissions by 2020.

The West Midlands is committed to tackling climate change and reducing the production of greenhouse gases that can be attributed to our region. Although we do not have specific regional targets for reduction of emissions, we do have a duty to contribute to the overall UK targets.

## 2 Greenhouse gas emissions by industry

---

### 2.1 Greenhouse gas emissions produced by industries

#### 2.1.1 Why?

Looking at greenhouse gases produced by industries shows us which industries are most polluting. Environmental Accounts publishes data on greenhouse gas emissions produced by each UK industry. This takes into account emissions created by industries from their production processes and energy use.

We have estimated greenhouse gas emissions for West Midlands' industries. We did this by weighting the Environmental Accounts data by the West Midlands' share of each industry's employment. For example the West Midlands had a 12.2% share of manufacturing employment in 2007 so we allocated 12.2% of all manufacturing emissions to the West Midlands.

We used Annual Business Inquiry - employee analysis data to calculate employment weights. Employment data is not available for the UK, so we had to calculate weights based on the West Midlands share of employment in Great Britain.

#### 2.1.2 Which industries produce the most emissions?

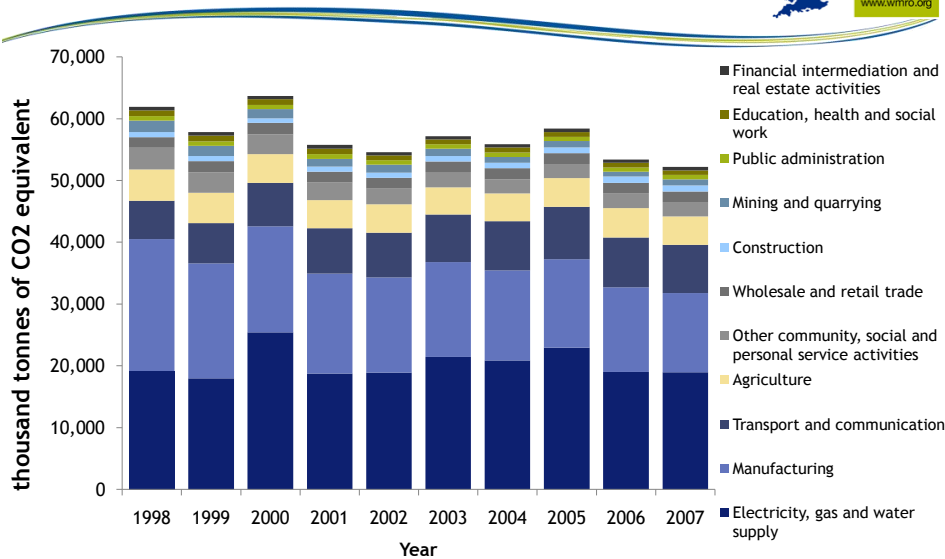
Service based industries have no production processes so unsurprisingly emit fewer greenhouse gases than production industries.

Figure 1 shows which industries produced the most greenhouse gases between 1998 and 2007. This confirms that production based industries such as electricity, gas and water supply, and manufacturing created most greenhouse gases. In contrast, service based industries such as other business services; and education, health and social work produced fewer greenhouse gases.

Overall greenhouse gas emissions from industries decreased between 1998 and 2007. Most industries in the West Midlands are less polluting than they were in 1998. The only exceptions were: transport and communication, and construction, where emissions grew by 2.5% a year on average.

Figure 1

## Greenhouse Gas emissions produced by West Midlands industries, 1998-2007



Source: Environmental Accounts and Annual Business Inquiry - employee analysis

West Midlands Regional Observatory 2010

The biggest reductions in emissions over this period were seen in manufacturing (by 8.5 million tonnes of CO<sub>2</sub> equivalent) and other community, social and personal service activities (by 1.2 million tonnes of CO<sub>2</sub> equivalent). The drop in manufacturing emissions is partly explained by the decline of this sector over 1998 to 2007.

The mining and quarrying industry experienced the biggest proportional decrease in emissions over this period (6.8% on average each year). This is because this sector has shrunk - with employment halving from 1998.

Electricity, gas and water supply businesses produced the most greenhouse gas over this period (18.9 million tonnes of CO<sub>2</sub> equivalent in 2007). Manufacturing businesses produced the second most greenhouse gas in 2007 (12.8 million tonnes of CO<sub>2</sub> equivalent). Combined, these two industries accounted for over half of the greenhouse gas emissions from industry in the West Midlands.

In contrast, other business services<sup>3</sup> produced the least greenhouse gas of all West Midlands industries over this period. In 2007, this amounted to 543 thousand tonnes of CO<sub>2</sub> equivalent. Education, health and social work produced the second least greenhouse gas of all West Midlands industries - amounting to 724.2 thousand tonnes of CO<sub>2</sub> equivalent in 2007.

<sup>3</sup> This includes: financial intermediation, and real estate, renting and business activities.

### 2.1.3 Are industries becoming more efficient?

Some industries have reduced their emissions since 1998. However, this doesn't mean they have become more efficient. Some industries shrank between 1998 and 2007 so you would expect them to produce fewer emissions. One example of this is manufacturing - in 2007 its workforce was two thirds the size it was in 1998.

Looking at Greenhouse Gas emissions per employee helps us to see how efficient businesses are by taking into account the size of the industry in terms of employee numbers. Table 2 summarises this information. Where emissions increased between 1998 and 2007, sectors are given a red arrow. Where emissions remained the same, sectors are given an orange arrow. Where emissions decreased, sectors are given a green arrow.

**Table 2 - Greenhouse gas emissions per employee  
(tonnes of carbon dioxide equivalent)**

Industry	1998	2007	Change	
Electricity, gas and water supply	1,281.2	1,735.1	+453.9	↑
Mining and quarrying	521.7	480.9	-40.8	↓
Agriculture	216.0	188.7	-27.3	↓
Transport and communication	57.5	59.0	+1.5	↑
Manufacturing	38.5	38.9	+0.4	↔
Other services	39.2	20.1	-19.1	↓
Construction	8.8	8.4	-0.5	↔
Public administration	6.9	6.0	-0.9	↔
Wholesale and retail trade	3.2	3.0	-0.2	↔
Education, health and social work	2.3	1.4	-0.9	↔
Other business services	1.6	1.2	-0.4	↔

Source: Environmental Accounts, Annual Business Inquiry - employee analysis

Table 2 shows that the efficiency of most industries has not changed since 1998<sup>4</sup> (manufacturing, construction, public administration, wholesale and retail, education, health and social work and other business services).

Alarming, the most polluting industry (electricity, gas and water supply) became less efficient over 1998 and 2007 as emissions per employee increased by over a third (1,735 tonnes of carbon dioxide equivalent in 2007). However, this industry is capital intensive and employs few people so it's unsurprising that it creates more emissions per employee. Also, this industry is responding to demand for energy from other sectors. Therefore, the high emissions from this industry more point to the need for all sectors to reduce their energy consumption.

On a more positive note, the second and third most polluting industries made significant efficiencies over this period. Emissions per employee in mining and quarrying reduced by 7.8% to 481 tonnes of carbon dioxide equivalent in 2007. Similarly, emissions per employee in agriculture reduced by 12.5% to 189 tonnes of carbon dioxide equivalent in 2007.

In 2007, the following sectors had the lowest emissions per employee rates in the West Midlands: wholesale and retail trade (three tonnes of carbon dioxide equivalent), education health and social work (one tonne of carbon dioxide equivalent), and other business services (one tonne of carbon dioxide equivalent). These sectors accounted for nearly two thirds of West Midlands' employment.

---

<sup>4</sup> i.e. their emissions per employee rate has not increased/decreased by less than one tonne

## 3 Greenhouse gas emissions from energy use

---

### 3.1 Greenhouse gas emissions from electricity use

#### 3.1.1 Why?

Household and business electricity use created a third of all CO<sub>2</sub> emissions in 2007 (13% from households and 20% from businesses). Calculating greenhouse gas emissions from electricity use helps us to monitor how far electricity use is contributing to environmental damage.

Reducing emissions from energy consumption has been identified as a priority<sup>5</sup>. Electricity use is the most common type of energy consumption. There are a number of efficiency measures that can be retrofitted into homes to make them more energy efficient. Improving energy efficiency will help to cut emissions<sup>6</sup>.

#### 3.1.2 Greenhouse gases from electricity use are decreasing

Figure 3 shows emissions from gas use dropped more than those from electricity use in all regions between 2005 and 2008. It also shows that drops in emissions from electricity were similar in all regions except London (0.5 million tonnes of CO<sub>2</sub> equivalent in the West Midlands). Greenhouse gases from electricity use dropped most in the East of England over 2005 and 2008 (by 751 thousand tonnes of CO<sub>2</sub> equivalent).

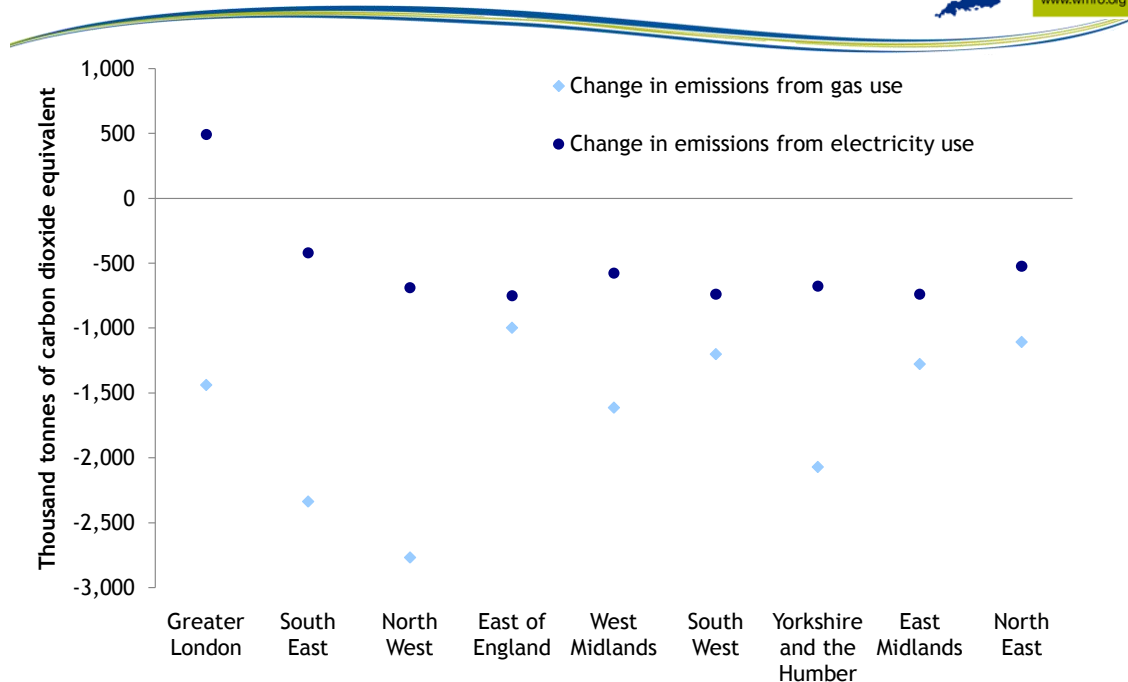
---

<sup>5</sup> Building a low-carbon economy by the Climate Change Committee

<sup>6</sup> These are referenced in: Advantage West Midlands and West Midlands Regional Assembly (2009) Low carbon housing: developing a baseline for refurbishment in the West Midlands

Figure 2

## Changes in Greenhouse Gas emissions from 2005 to 2008



Source: BERR regional and local electricity and gas consumption, DEFRA 2009 GHG conversion factors - Annex 3 Electricity Conversion Factors

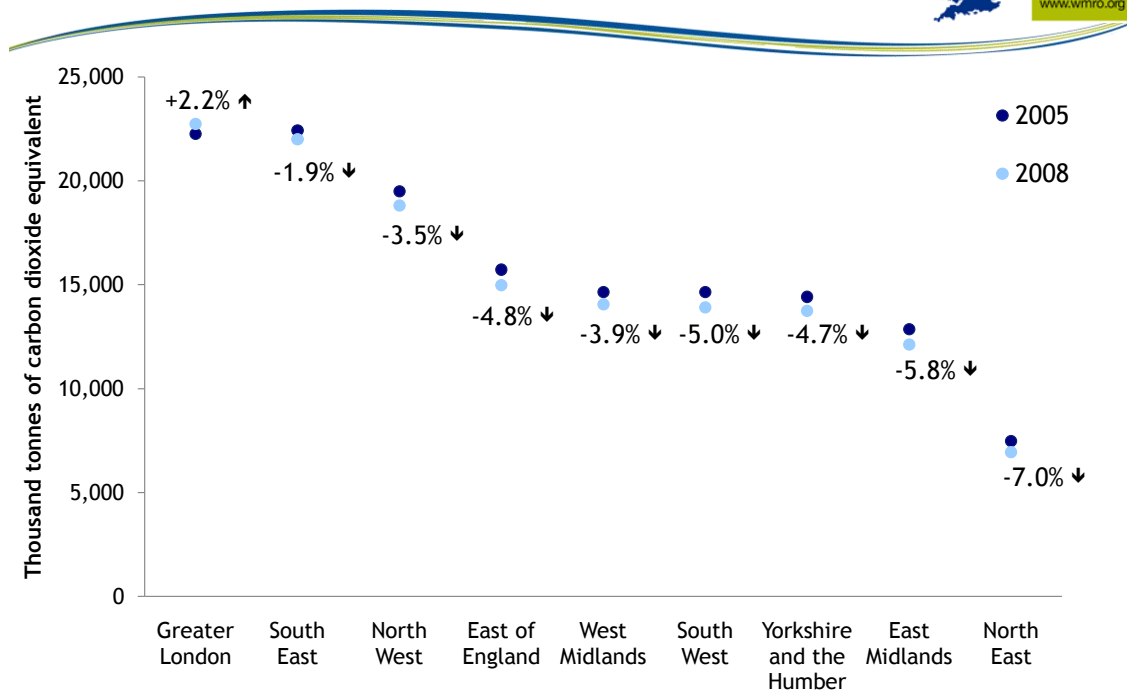
West Midlands Regional Observatory 2010

Figure 4 shows that the West Midlands' electricity use produced an average amount of greenhouse gas emissions over 2005 and 2008, compared to other regions. Figure 4 also shows that the West Midlands' proportional reduction in emissions from electricity use was third smallest of all regions (dropping by 3.9%).

The only region to experience an increase in emissions from electricity between 2005 and 2008 was London (by 2.2%). However, emissions in 2008 were lower than in 2007. The North East experienced the biggest proportional drop in greenhouse gas emissions from electricity of all regions (by 7%).

Figure 3

## Greenhouse Gas emissions from electricity use



Source: BERR regional and local electricity consumption, DEFRA 2009 GHG conversion factors - Annex 3 Electricity Conversion Factors

West Midlands Regional Observatory 2010

Greenhouse gas emissions per head from electricity use dropped in all regions between 2005 and 2008. In 2008, the West Midlands had the joint lowest emissions per head with: Yorkshire and the Humber, the East of England and the South East (2.6 tonnes). London had the highest emissions per head over this period (3 tonnes per head). The drop in emissions per head over 2005 and 2008 was similar in all regions (between 0 and 0.2 tonnes).

## 3.2 Greenhouse gas emissions from gas use

### 3.2.1 Why?

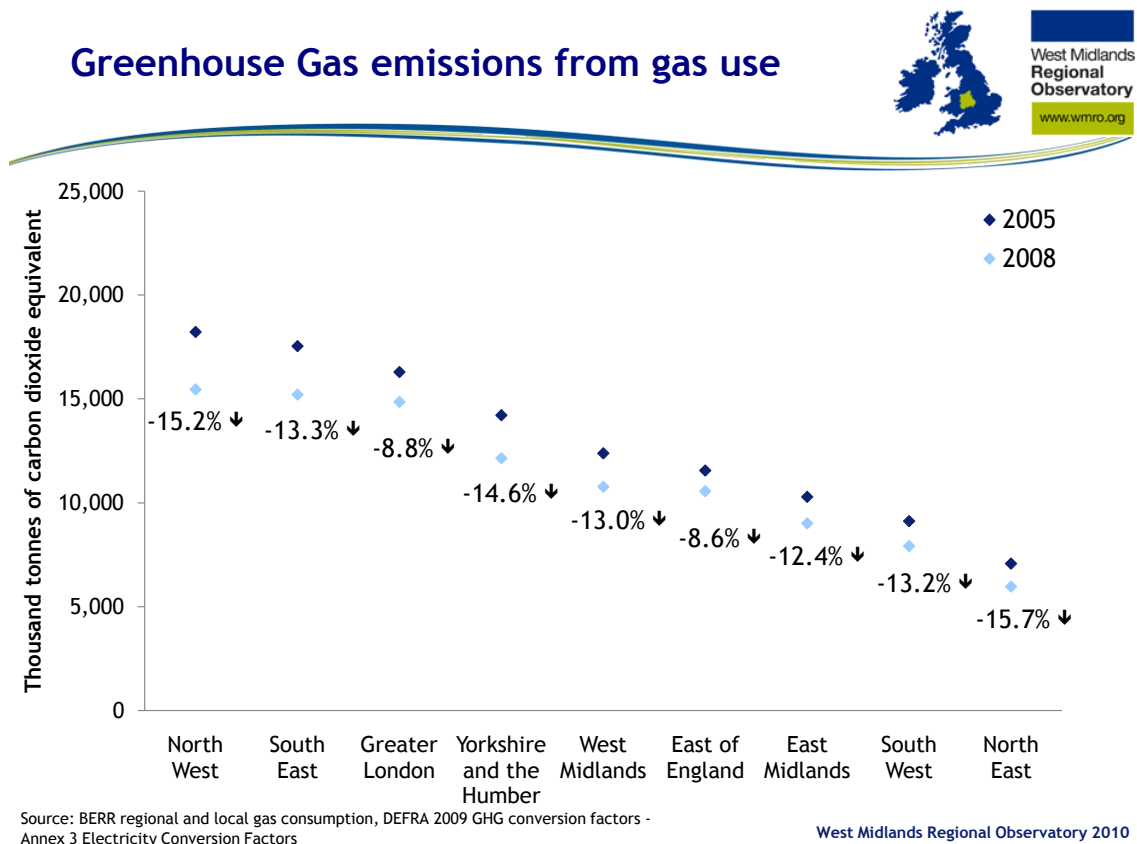
Gas use accounts for just under a quarter of all CO<sub>2</sub> emissions. Calculating greenhouse gas emissions from gas use helps us to monitor how far gas use is contributing to environmental damage.

### 3.2.2 Greenhouse gases from gas use are decreasing

Figure 3 shows that emissions from gas use remain lower than emissions from electricity use for all regions. Emissions from gas use also dropped more than emissions from electricity use over 2005 and 2008.

Figure 5 shows that the West Midlands ranked in middle place for greenhouse gas emissions from gas use between 2005 and 2008. It produced 10.8 million tonnes of CO2 equivalent in 2008. This was 1.6 million tonnes of CO2 equivalent less than that produced in 2005.

Figure 4



However, proportionally greenhouse gas reductions in the West Midlands (13%) were fourth smallest of all regions between 2005 and 2008. Emissions reduced most in the North East (15.7%) over this period, and least in the East of England (8.6%).

Greenhouse gas emissions per consumer also decreased in all regions between 2005 and 2008. The West Midlands ranked in middle place for emissions per consumer over 2005 and 2008 (5.2 tonnes each in 2008). The West Midlands' fall in emissions was average (0.9 tonnes) over this period compared to other regions (0.7 to 1.2 tonnes). Yorkshire and the Humber produced most emissions per consumer from gas use over 2005 and 2008 (5.8 tonnes in 2008).

## 4 Carbon dioxide emissions

---

### 4.1 Carbon dioxide emissions per head

#### 4.1.1 Why?

Carbon dioxide is the most common greenhouse gas, and accounts for 85% of greenhouse gases. Looking at carbon dioxide emissions per head gives an indication of how energy efficient an area is. For example, some areas may appear to produce few emissions but have a small population and therefore have a higher carbon dioxide per head rate. Higher rates indicate that people are not using energy efficiently.

#### 4.1.2 Carbon dioxide emissions per head are falling

Encouragingly, Figure 6 shows that carbon dioxide emissions per head fell across the whole of England between 2005 and 2007. The North East produced the most carbon dioxide emissions per head (12.6 tonnes) in England. However, the North East improved its carbon dioxide emissions per head rate the most of all regions between 2005 and 2007 (dropping by 0.6 tonnes). London had the lowest carbon dioxide emissions per head rate in 2007 (6 tonnes).

Figure 5

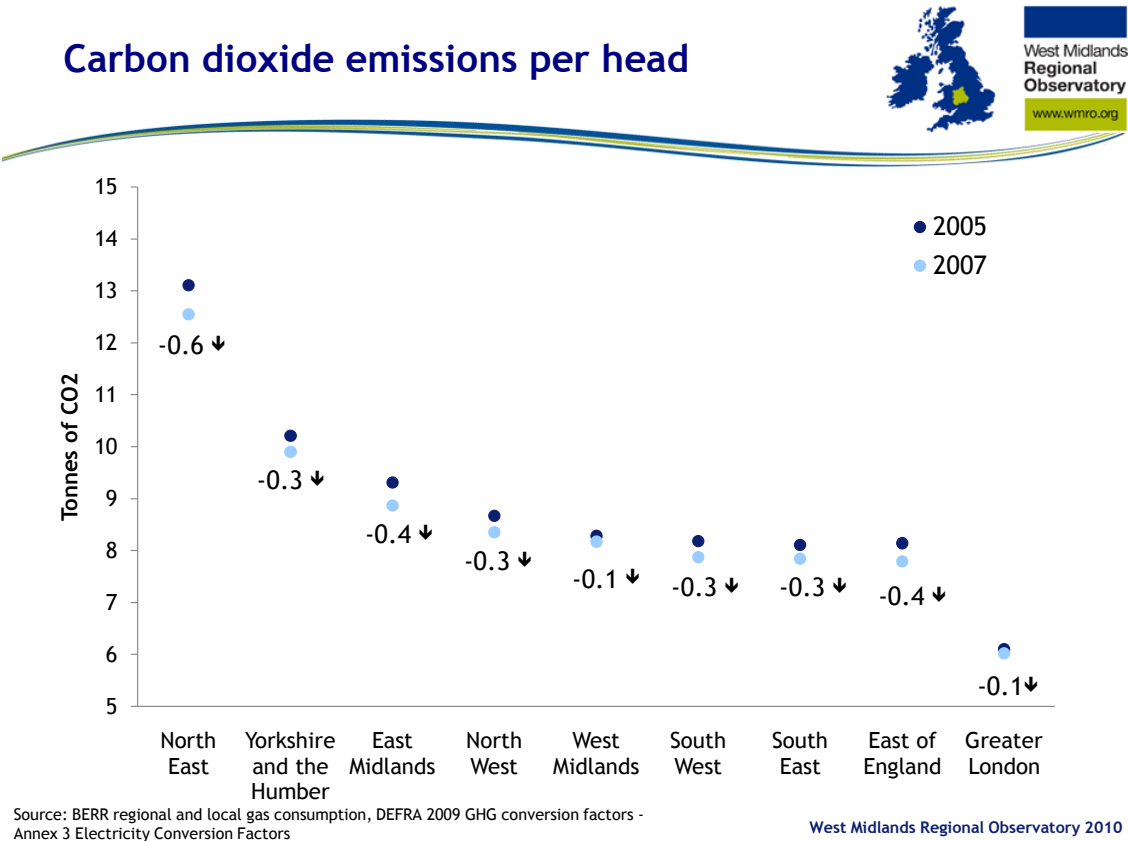


Figure 6 shows that the West Midlands ranked in middle place for carbon dioxide emissions produced per head, between 2005 and 2007 (8.2 tonnes of carbon dioxide emissions per head in 2007).

However, emissions per head in the West Midlands fell by the smallest amount of all regions over this period (just 0.1 tonnes). Other regions reduced their emissions by three times this which suggests the West Midlands could do more to cut emissions.

## 4.2 West Midlands carbon dioxide emissions by consuming sector

### 4.2.1 Why?

Carbon dioxide is the most common greenhouse gas, and accounts for 85% of all greenhouse gases. The Department for Energy and Climate Change publishes data on carbon dioxide emissions from energy use for three different consumer groups: households, businesses, and vehicles.

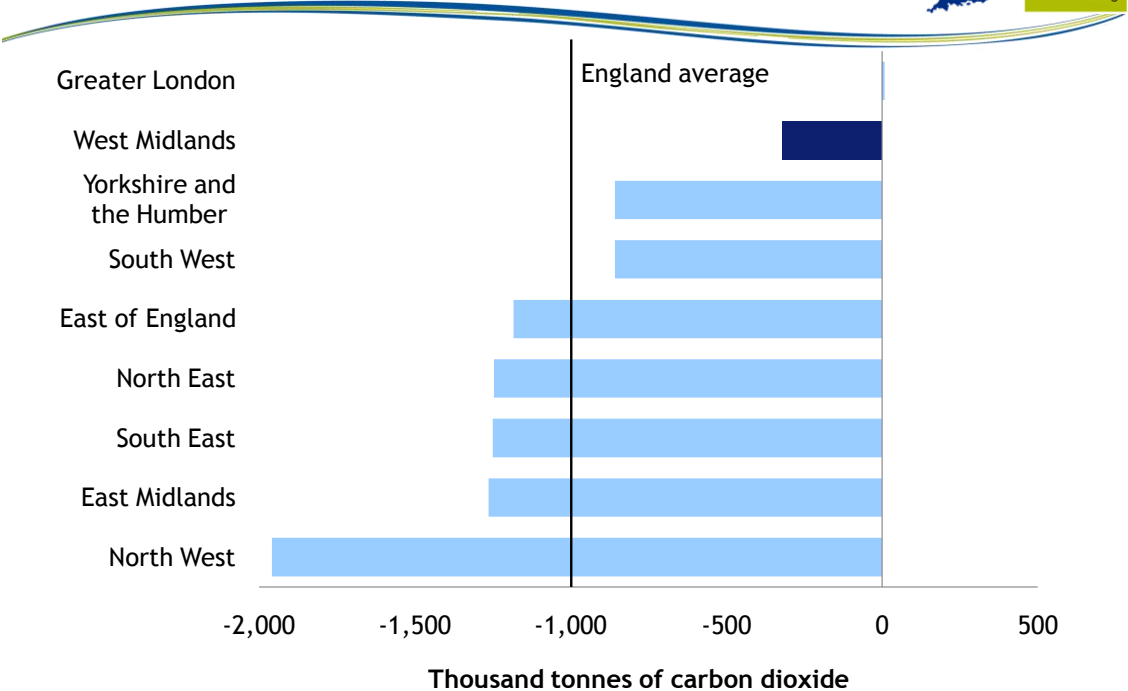
Breaking down carbon dioxide emissions by consumer groups helps us to see who creates the most emissions. We will start by looking at total carbon dioxide emissions before breaking these down by consumer groups.

### 4.2.2 Carbon dioxide emissions are falling

Figure 7 shows that total carbon dioxide emissions from energy use fell in all regions between 2005 and 2007, apart from London. The West Midlands experienced the smallest fall in emissions over this period (by 319 thousand tonnes).

Figure 6

### Change in carbon dioxide emissions between 2005 and 2007



Source: Department for Energy and Climate Change

West Midlands Regional Observatory 2010

London was the only region to experience a net increase in emissions over 2005 and 2007 (by 8.5 thousand tonnes). The North West experienced the biggest net drop in carbon dioxide emissions over 2005 and 2007 (by two million tonnes).

Table 3 shows the West Midlands’ carbon dioxide emissions pattern between 2005 and 2007. Initially emissions increased by 341 thousand tonnes over 2005 and 2006, but then dropped by 660 thousand tonnes between 2006 and 2007. It is encouraging to see that emissions are beginning to fall and indicates that the West Midlands is addressing emissions more effectively.

Table 3 - West Midlands carbon dioxide emissions (million tonnes)

Area	2005	2006	2007	2005-2006 change		2006-2007 change	
Total emissions	44.3	44.7	44	0.3	↑	-0.66	↓

Source: Department of Energy and Climate Change

However, the West Midlands’ decrease in emissions over 2006 and 2007 was the third smallest of all regions. This indicates it could do more to reduce its emissions.

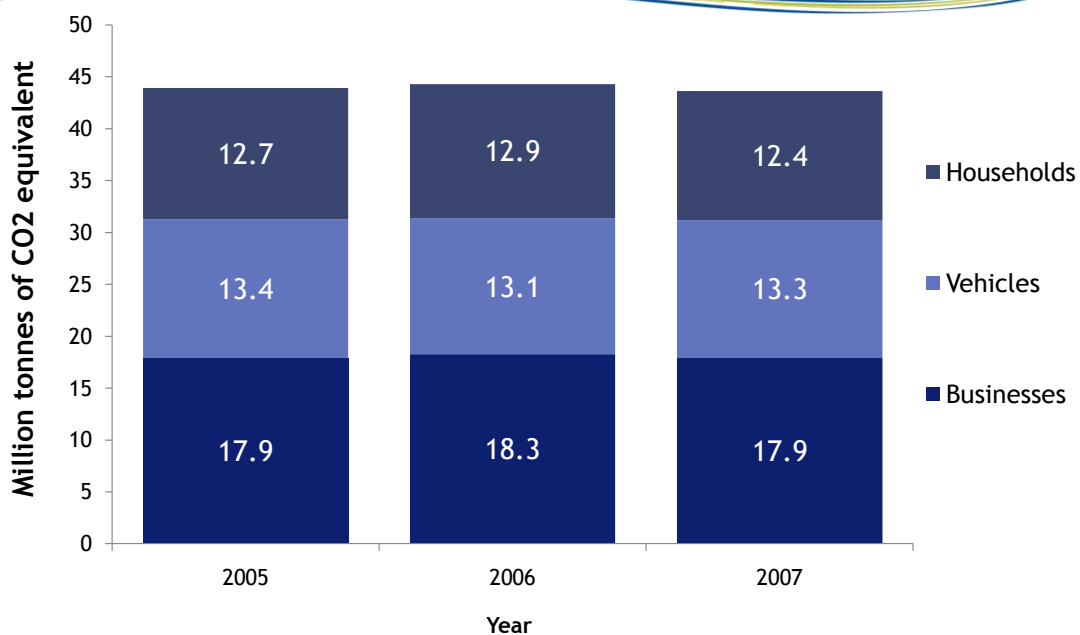
Despite this, the West Midlands produced less carbon dioxide (44 million tonnes) than England’s average (46.6 million tonnes) between 2005 and 2007.

### 4.2.3 Businesses produce most carbon dioxide

Figure 8 shows that the amount of CO2 produced each year between 2005 and 2007 remained fairly stable. Businesses produced more emissions (41% of emissions in 2007) than households (28% of emissions in 2007) or vehicles (30% of emissions in 2007) in the West Midlands, between 2005 and 2007. This was also the case in other regions.

Figure 7

#### Carbon dioxide emissions produced in the West Midlands by: businesses, households and vehicles



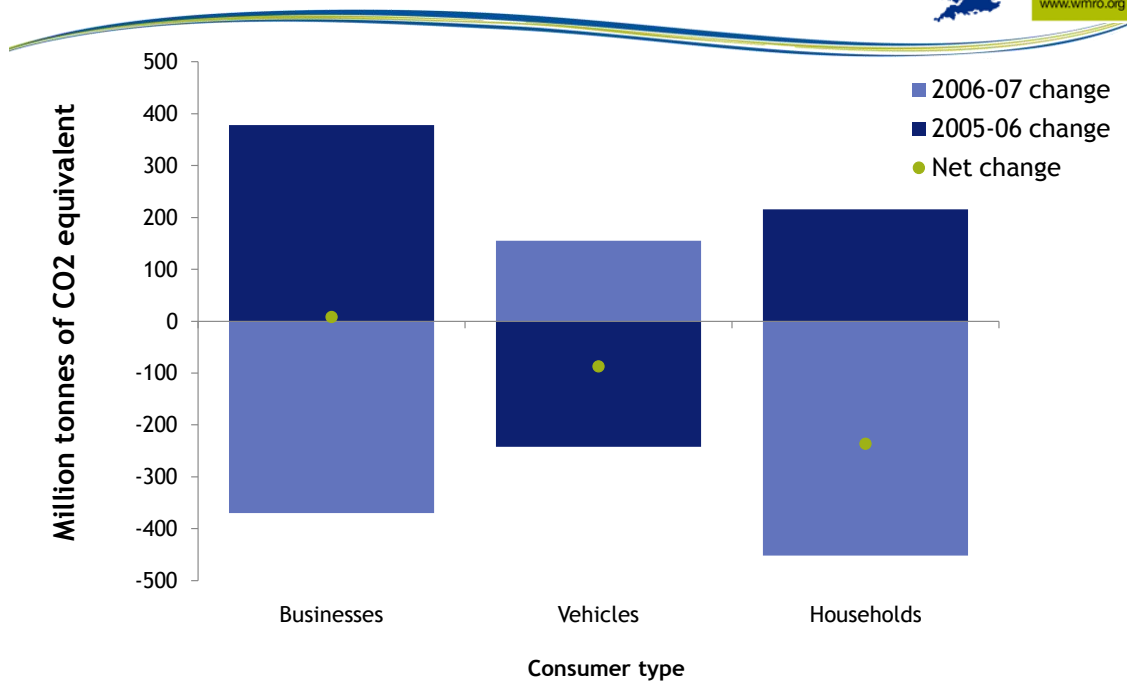
Source: Department for Energy and Climate Change

West Midlands Regional Observatory 2010

Figure 9 shows how carbon dioxide emissions from each consumer group changed over 2005 and 2007. The green dots show net changes in emissions over this period.

Figure 8

## Change in West Midlands carbon dioxide emissions between 2005 and 2007



Source: Department for Energy and Climate Change

West Midlands Regional Observatory 2010

Carbon dioxide emissions from businesses increased marginally between 2005 and 2007 (by 8 thousand tonnes overall). Emissions from households dropped the most (by 236 thousand tonnes overall) over this period. Emissions from vehicles dropped by 87 thousand tonnes overall.

### 4.3 Comparing carbon dioxide emissions with other regions

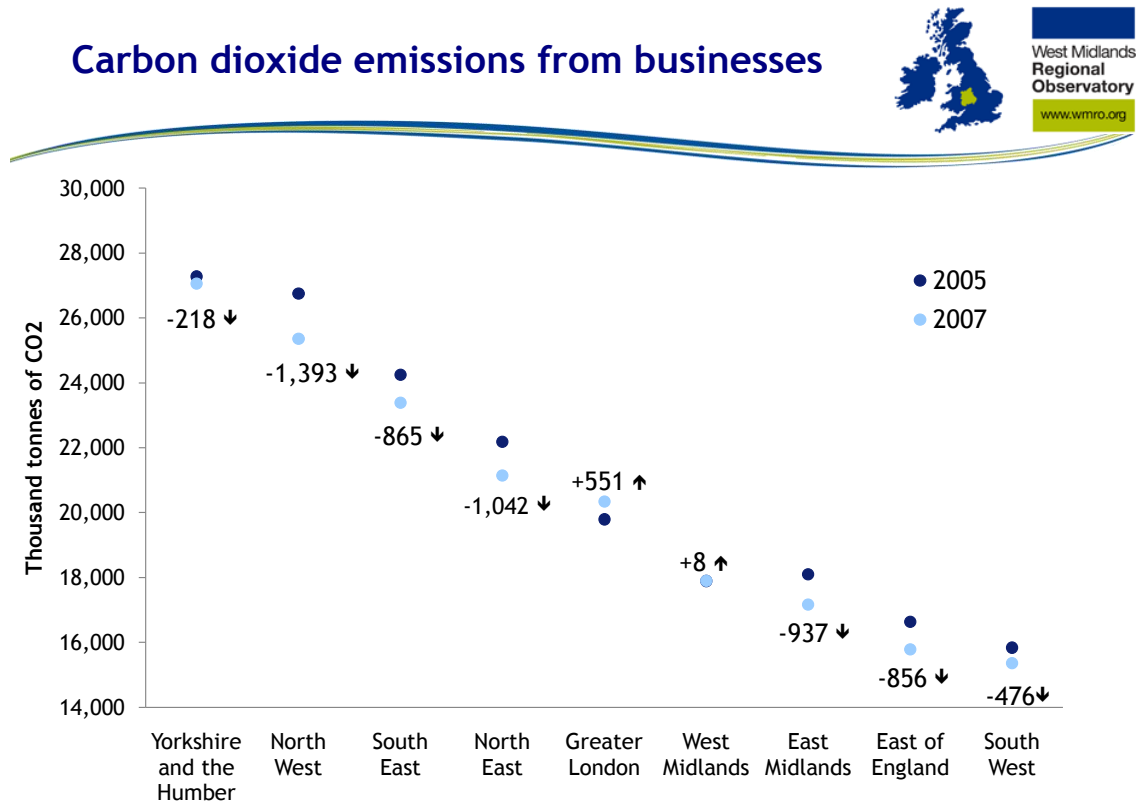
#### 4.3.1 Why?

This section compares the amount of carbon dioxide produced by each type of consumer across regions. Comparing carbon dioxide emissions produced in the West Midlands with other regions helps to benchmark the West Midlands performance.

### 4.3.2 Business carbon dioxide emissions

Figure 10 shows that West Midlands' businesses produced less carbon dioxide (17.9 million tonnes) than businesses in most other regions in 2007. Businesses in Yorkshire and the Humber produced most carbon dioxide (27.1 million tonnes) and businesses in the South West produced the least (15.4 million tonnes).

Figure 9



Source: BERR regional and local gas consumption, DEFRA 2009 GHG conversion factors - Annex 3 Electricity Conversion Factors

West Midlands Regional Observatory 2010

Despite this, West Midlands' businesses produced more carbon dioxide in 2007 (+8 thousand tonnes) than in 2005. This meant the West Midlands' fell from having the third lowest business emissions in 2005 to fourth lowest in 2007. Businesses in all other regions, apart from in London, reduced their emissions over this period. Business emissions improved most in the North West over 2005 and 2007 (falling by 1.4 million tonnes).

West Midlands' businesses are starting to emit less carbon dioxide, but reductions are smaller than those achieved in most other regions. Between 2006 and 2007 emissions dropped by 370 thousand tonnes in the West Midlands. However, this was the third smallest decrease of all regions and was less than England's average reduction (581 thousand tonnes).

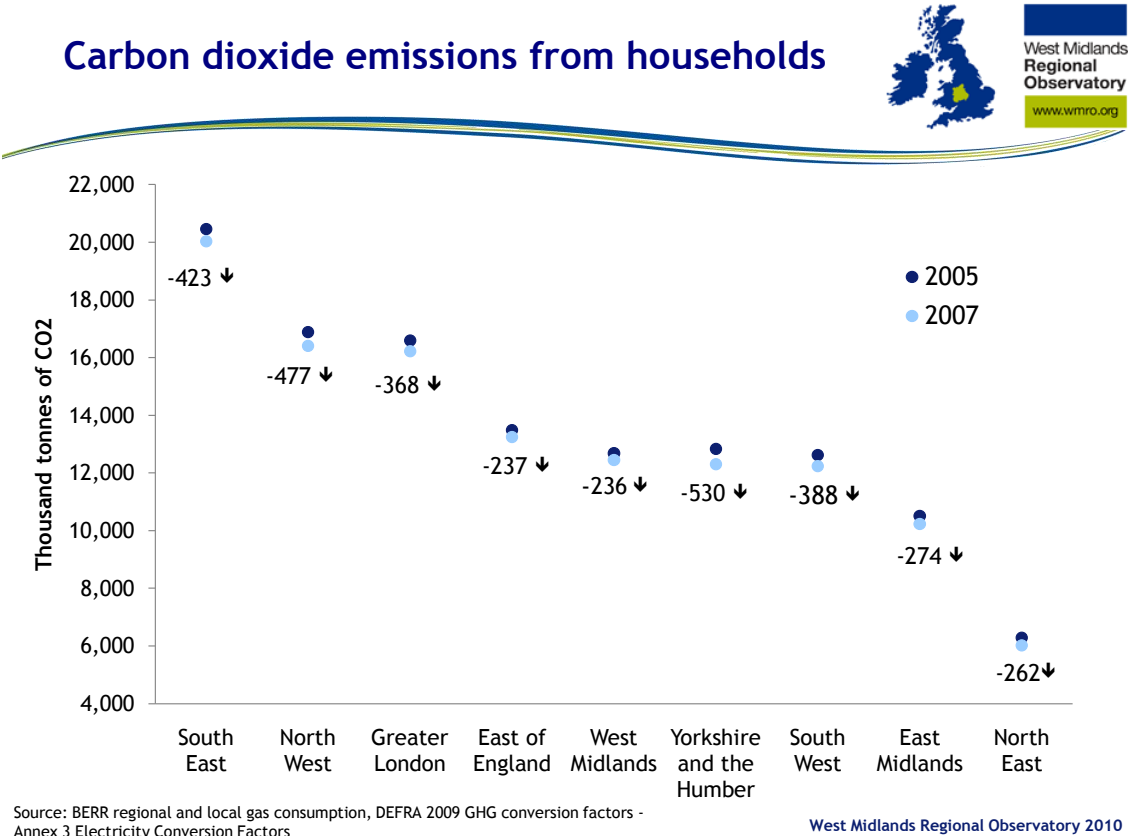
Business emissions per head in the West Midlands were average compared to other regions between 2005 and 2007 (3.3 tonnes in 2007). The North East produced the most business emissions per head over this period (8.2 tonnes in 2007), and London produced the least (2.7 tonnes in 2007).

This indicates that West Midlands' businesses could further improve their efficiency, in line with other regions. Although emissions from businesses are lower than many other regions at the moment, there is a danger that the West Midlands will get left behind as emissions reduce at a slower pace.

### 4.3.3 Household carbon dioxide emissions

Figure 11 shows that in 2007, West Midlands' households produced an average amount of carbon dioxide (12.4 million tonnes) compared to households in other regions. Households in the South East produced the most carbon dioxide (20 million tonnes) and households in the North East produced the least (6 million tonnes).

Figure 10



West Midlands' households produced less carbon dioxide in 2007 than in 2005 (reducing by 236 thousand tonnes). However, this reduction was the smallest of all regions. Yorkshire and Humber made the biggest improvement in emissions (falling 530 thousand tonnes). This meant that the West Midlands position dropped from fourth best of all regions in 2005 to fifth best in 2007.

Despite this, West Midlands' households are starting to achieve bigger reductions in emissions. Between 2006 and 2007 emissions fell by 452 thousand tonnes. Emissions fell in all other regions but the West Midlands' reduction was the fifth biggest.

It is also worth bearing in mind that the West Midlands' contains more households than regions with lower household emissions (Yorkshire and the Humber, South West, East Midlands and the North East). Therefore, you would expect household emissions to be higher in the West Midlands.

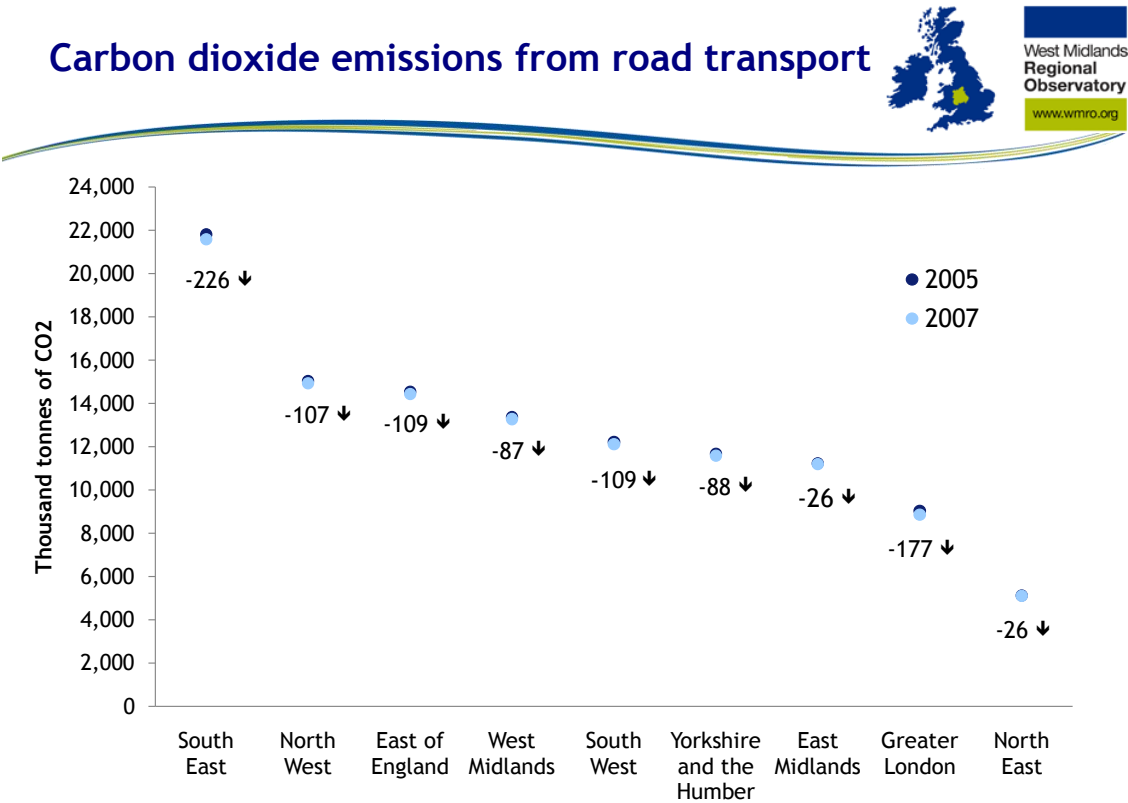
Encouragingly, household emissions per head were second lowest in the West Midlands between 2005 and 2007 (2.3 tonnes in 2007). They reduced by the same amount as other regions over this period (0.1 tonnes). Emissions per head were highest in the South East (2.4 tonnes in 2007), and lowest in London (2.1 tonnes in 2007).

This indicates that West Midlands' households are moving in the right direction and more efficient than households in most other regions. However, there is still room for improvement.

#### 4.3.4 Vehicle carbon dioxide emissions

Figure 12 shows that in 2007 West Midlands' vehicles produced the fourth most carbon dioxide of all regions (13.3 million tonnes). Vehicles in the South East produced most carbon dioxide (21.6 million tonnes), and vehicles in the North East produced the least (5.1 million tonnes).

Figure 11



Source: BERR regional and local gas consumption, DEFRA 2009 GHG conversion factors - Annex 3 Electricity Conversion Factors

West Midlands Regional Observatory 2010

West Midlands’ vehicles produced less carbon dioxide in 2007 than in 2005 (by 87 thousand tonnes). This reduction was the third smallest of all regions. Vehicles in the South East achieved the biggest reduction in emissions over this period (226 million tonnes) and the North East made the smallest reduction (25.6 million tonnes).

This is concerning as the West Midlands experienced the third biggest increase in emissions from vehicles (by 155 thousand tonnes) over 2006 and 2007. Emissions also increased in most other regions so the West Midlands position did not change. However, if emissions from vehicles continue to increase at the same rate, the West Midlands position is likely to worsen.

Vehicle emissions per head were also average in the West Midlands over 2005 and 2007 (2.5 tonnes per head in 2007). Vehicle emissions per head were highest in the South East (2.6 tonnes in 2007) and lowest in London (1.2 tonnes per head in 2007).

This indicates that the West Midlands' needs to do more to improve its vehicle efficiency. The number of vehicles on roads will increase in coming years<sup>7</sup>, which means it is particularly important to get emissions from vehicles under control. There are a number of opportunities to improve the efficiency of vehicles, such as electric cars.

## 4.4 Carbon dioxide emissions by Gross Value Added (GVA)

### 4.4.1 Why?

Carbon dioxide is the most common greenhouse gas emission. Looking at the number of carbon dioxide emissions produced for each million of Gross Value Added (GVA) shows the link between economic development and environmental damage. Ideally all sectors with high GVA would have low carbon dioxide emissions to minimise harm to the environment.

### 4.4.2 West Midlands produces an average amount of carbon dioxide

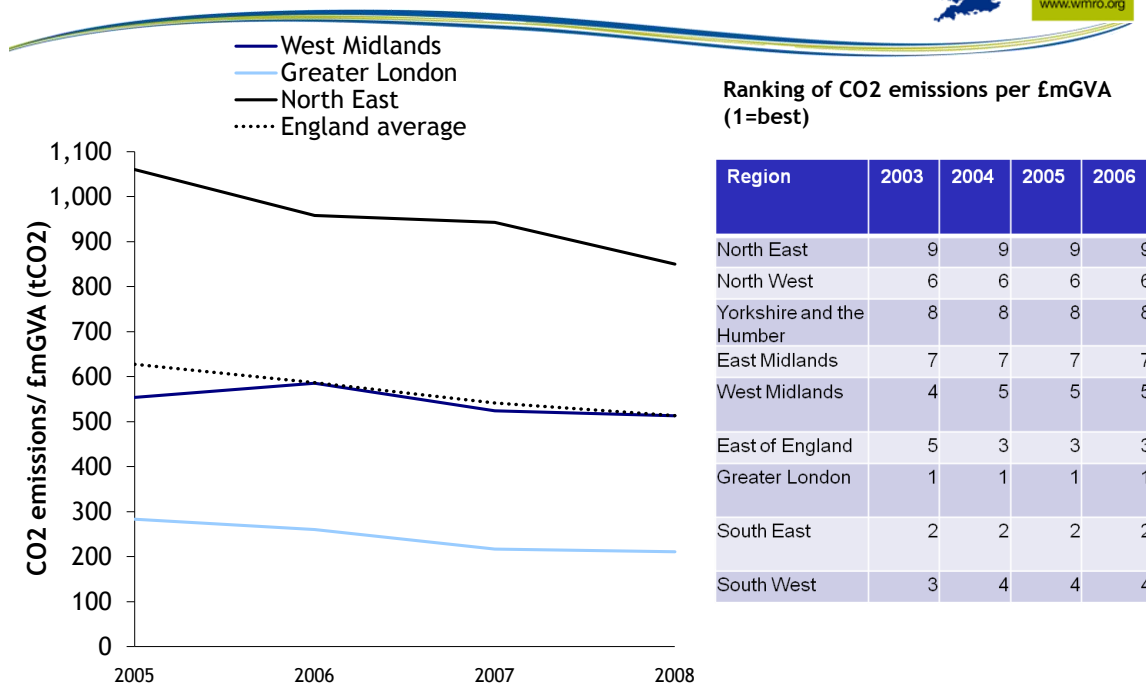
Figure 13 shows that emissions of carbon dioxide (513 tonnes) created for every million Gross Value Added produced in the West Midlands were similar to the average for England (514 tonnes). In 2006, the West Midlands ranked in middle place for the amount of carbon dioxide produced for each million of GVA. It is encouraging to see that carbon dioxide emissions produced for each £million of GVA fell in the West Midlands between 2005 and 2008, in line with England.

---

<sup>7</sup> State of the Region climate change thematic dialogue by the West Midlands Regional Observatory

Figure 12

## Carbon dioxide emissions (tonnes) by GVA (£millions)



Source: Department for Energy and Climate Change (DECC) high level energy indicators

Between 2003 and 2006, carbon dioxide emissions for every million of Gross Value Added were below England’s average in the West Midlands. However, the West Midlands fell from fourth best in 2005 to middle place 2006, where it has remained since.

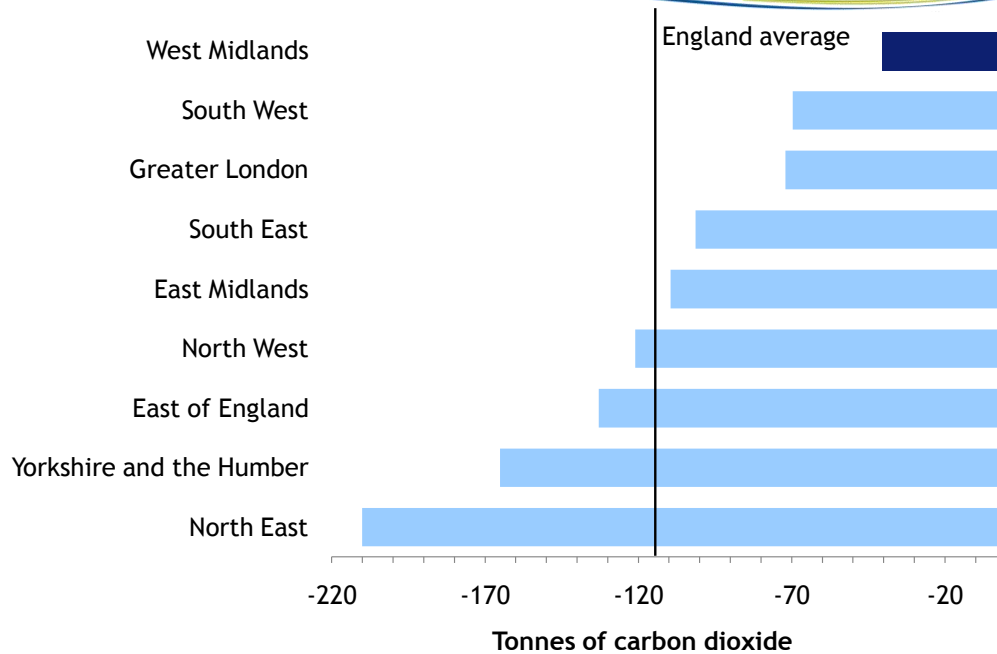
Between 2003 and 2006, the North East produced more carbon dioxide (850 tonnes) for each million of Gross Value Added generated than any other region. London produced the least carbon dioxide emissions (211 tonnes) for Gross Value Added generated of all regions.

### 4.4.3 The West Midlands has made the smallest reduction in carbon dioxide

Figure 15 shows that over 2003 and 2006 carbon dioxide emissions produced for every million of Gross Value Added reduced by the smallest amount in the West Midlands of all regions (by 41 tonnes). In contrast, carbon dioxide emissions for every million of GVA produced reduced by the greatest margin in the North East (by 210 tonnes).

Figure 13

#### Change in carbon dioxide emissions produced for each £million GVA between 2003 and 2006



Source: Department for Energy and Climate Change

West Midlands Regional Observatory 2010

## 5 Next steps

---

### 5.1 Greenhouse gas emissions by Gross Value Added (GVA)

We would like to show the relationship between greenhouse gases produced by industries and the amount of GVA generated. However, data is only available on greenhouse gas emissions produced by industries and doesn't take into account their consumption.

Comparing greenhouse gas emissions produced by industries with GVA generated is not a fair way of comparing industries. This is because each industry performs different activities, and some of these are inherently more polluting than others. However, all sectors are needed for the economy to operate well. For example electricity, gas and water supply creates the most greenhouse gas emissions and accounts for the second smallest amount of GVA in the region. But all sectors need electricity, gas and water to function.

If data on greenhouse gas emissions from consumption by industry becomes available, we will show the relationship between emissions and GVA in future monitoring work.

## Full document information

---

Title	West Midlands Greenhouse Gas Emissions monitoring report 2010
Date created	2010-04-26
Type	Report
Description	A report that monitors greenhouse gas emissions in the West Midlands.
Creator	Research Team West Midlands Regional Observatory
Publisher	West Midlands Regional Observatory Level 3, Millennium Point Curzon Street Birmingham B4 7XG  Telephone: 0121 202 3243 Fax: 0121 202 3240 Email: <a href="mailto:naomi.winchurch@wmro.org">naomi.winchurch@wmro.org</a> Website: <a href="http://www.wmro.org">www.wmro.org</a>
Contributor	John Walker, <a href="mailto:john.walker@wmro.org">john.walker@wmro.org</a>
Rights	West Midlands Regional Observatory 2010
Document contact	Naomi Winchurch Research Team West Midlands Regional Observatory Tel: 0121 202 3243 Email: <a href="mailto:naomi.winchurch@wmro.org">naomi.winchurch@wmro.org</a>
Location	West Midlands Regional Observatory
Coverage, Time period	2005-2008
Coverage, Geographical	West Midlands
Format	Text/MS Word 2003
Subject category	Research
Subject keywords	Greenhouse gases; emissions; carbon dioxide; West Midlands; monitoring; GHG; methane; NOx
Date available	2010-04-26
Frequency of update	As required
Cost	Free
Access restrictions	Read only
Language	English
Identifier URL	<a href="#">Greenhouse-gas-emissions-monitoring_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)**