CO_2 Emissions within the Scope of Influence of Local Authorities (NI 186)

2012 Performance Report

Date: August 2014

Owner: Environment Support Team

Version 1

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1. INTRODUCTION

1.1. Background

In June 2014, DECC released national data for 2012 Carbon Dioxide (CO_2) emissions by local authority. This data set is the successor to the former NI 186 requirement and is now referred to as: "*Carbon dioxide emissions within the scope of influence of Local Authorities*".

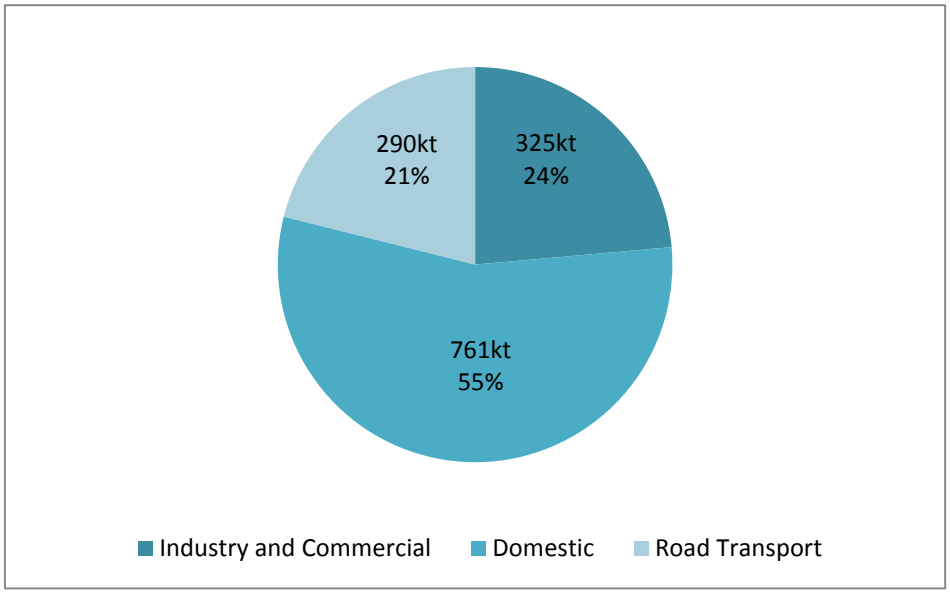
This updated national data set includes CO_2 emissions considered to be within local authorities' influence, such as industrial and commercial emissions, domestic emissions, and road transport emissions (collectively referred to here as *'all-sector emissions'*). This forms part of a broader data set (Local and regional CO_2 emissions estimates for 2005-2012), which includes emissions over which councils have no real influence, such as diesel railways, land use, and forestry.

National CO_2 data has been released annually by DECC since 2005 (18 months after the reporting year-end). However, the basis on which the data is compiled has changed as information capture techniques have improved. This means previous years' data have had to be recast and so this report cannot be compared with previous reports. It should be noted that the 2012 data in this report is expressed either as *'total'* (the borough as a whole) or *'per capita,'* to provide more meaningful comparison.

1.2. 2012 Key Point Summary

- In 2012, Bromley borough emitted a total of 1.38Mt CO_2 comprising: domestic emissions at 761kt (55%); road transport emissions at 290kt (21%); and commercial emissions at 325kt (24%)
- Total all-sector CO_2 emissions for Bromley increased by 7% (89kt) from 2011 to 2012 but have reduced by 11% (175kt) since 2005
- Bromley's per capita all-sector CO_2 emissions for 2012 are 4.4t, an increase of 6% from 2011 to 2012 but a 15% fall since 2005. These are below both the national and London per capita averages
- However, Bromley has a higher than average per capita CO_2 emissions for the domestic sector (2.4t per capita): indeed, Bromley is the 3rd worst performer in London
- Industry & Commercial per capita CO_2 emissions are lower than the London average
- Transport emissions have fallen by 16% compared with baseline (2005) and 1.4% since 2011

Figure 1: 2012 Total CO_2 Emissions by Sector



1.3. Historic and Current Data

In 2012, Bromley experienced an increase in total CO_2 emissions as did 377 of the 406 UK local authorities, suggesting a national trend.

Table 1 shows detailed borough-wide total CO_2 emissions data since 2005.

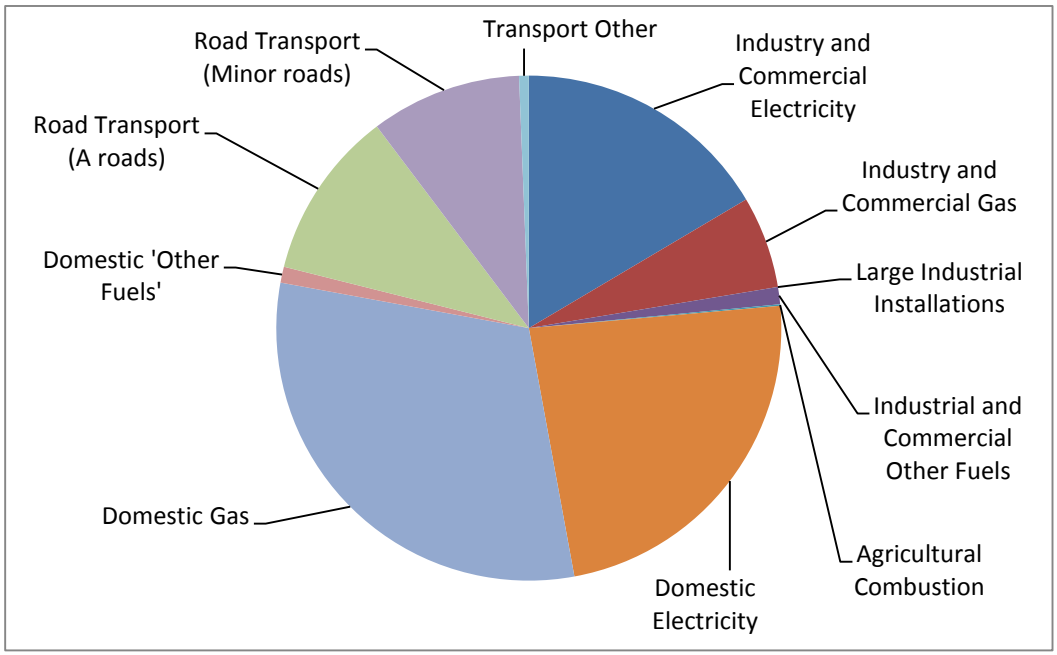
Table 1: All-Sector Emissions: 2005-2012 (kt CO_2)

Year	A. Industry and Commercial Electricity	B. Industry and Commercial Gas	C. Large Industrial Installations	D. Industrial and Commercial Other Fuels	E. Agricultural Combustion	F. Domestic Electricity	G. Domestic Gas	H. Domestic 'Other Fuels'	I. Road Transport (A roads)	K. Road Transport (Minor roads)	M. Transport Other	Grand Total
2005	250	106	0	26	1	321	487	14	184	153	9	**1,551**
2006	290	113	0	23	1	336	469	14	184	148	9	**1,589**
2007	263	91	0	23	1	337	446	13	179	151	9	**1,514**
2008	255	90	0	21	1	326	458	14	165	144	9	**1,482**
2009	236	79	0	16	1	294	417	14	159	139	9	**1,364**
2010	236	86	0	17	1	301	464	15	155	136	8	**1,419**
2011	222	71	0	15	1	289	381	14	151	134	9	**1,287**
2012	**227**	**81**	**0**	**15**	**1**	**324**	**424**	**14**	**149**	**133**	**9**	1,376

On a total all-sector basis, Bromley's CO_2 emissions have fallen by 11% from 1,551kt in 2005 to 1,376kt in 2012, but increased by 7% over the latest recorded year (2011 compared with 2012).

Figure 2: Sectoral Emissions Pie Chart

Figure 2 shows a detailed breakdown of emissions by sector in LBB. This chart highlights the dominance of a) domestic emissions (55% of total) and b) emissions from the use of domestic gas (31% of total).

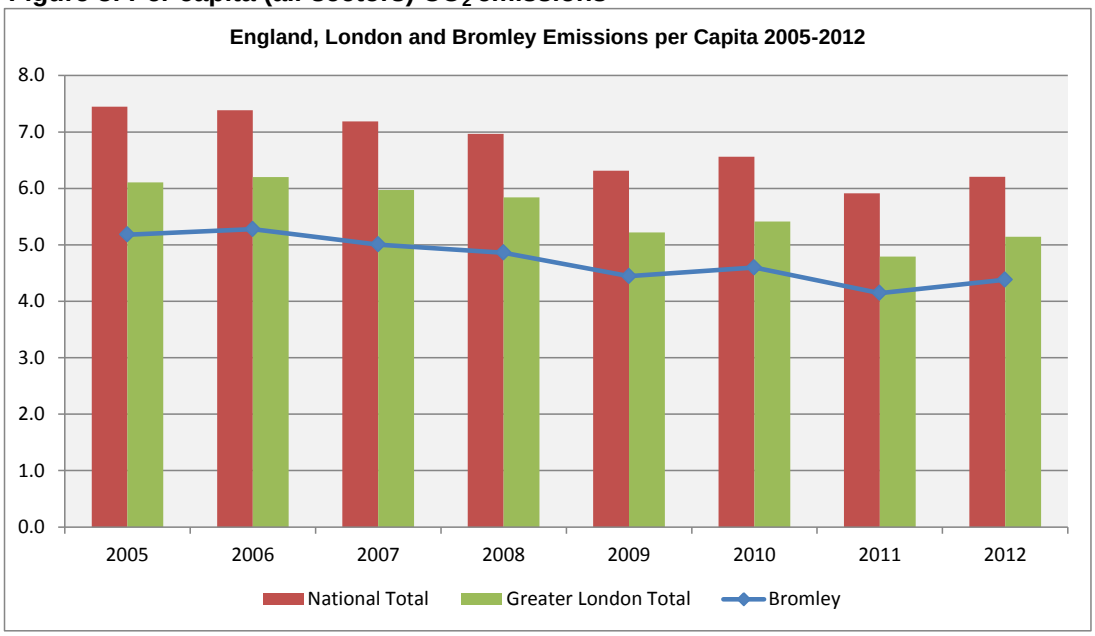


1.4. Per Capita CO_2 Emissions

Since 2005, Bromley's (all-sector) per capita CO_2 emissions have fallen by 15%. Between 2011 and 2012, however, emissions per capita increased by 7%.

Figure 3 shows Bromley's per capita trend (blue line) compared with Greater London (green bar) and nationally (brown bar) since 2005.

Figure 3: Per capita (all-sectors) CO_2 emissions



On average, 2012 all-sector per capita CO_2 emissions in Bromley are 1.8 tonnes per capita lower than the National average and 0.7 tonnes per capita lower than the average for Greater London.

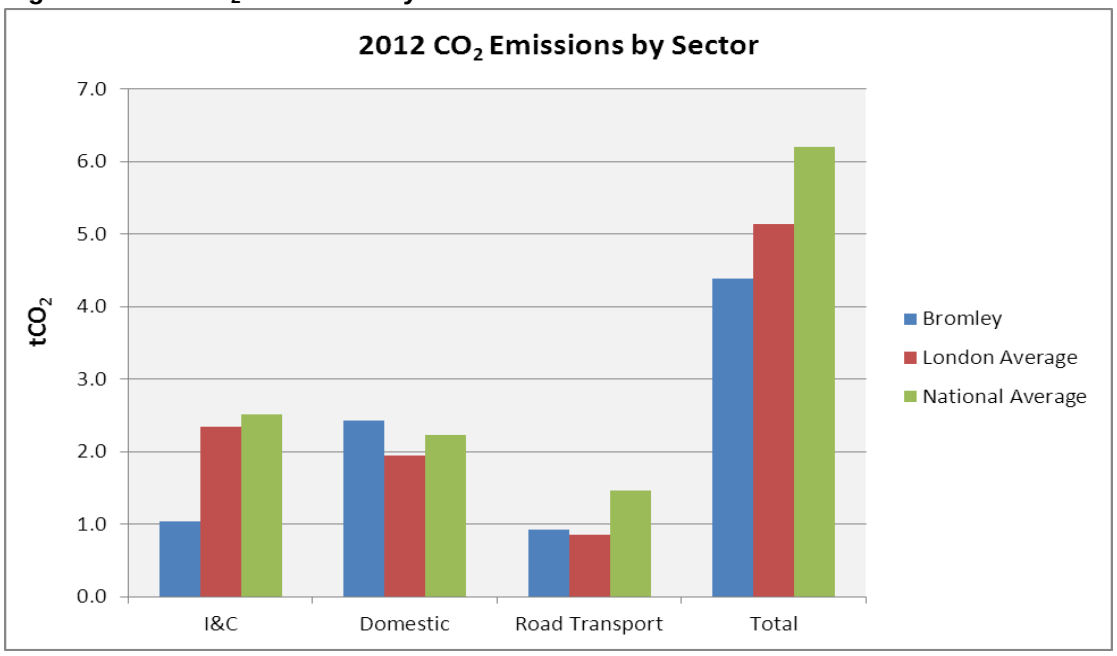
2. SECTORAL PER CAPITA CO_2 EMISSIONS

Figure 4 compares Bromley's sectoral (commercial, domestic, transport) CO_2 emissions (per capita) with the Greater London and national averages.

Bromley's CO_2 emissions profile shows a marked variance with London and National averages.

- The lack of large-scale industrial / commercial installations has resulted in Bromley's commercial CO_2 emissions being much lower than the national average.
- Domestic CO_2 emissions, however, are higher than both the London and National average. This is largely due to the size of the borough (transport emissions), the 'hard-to-treat' nature of the housing stock (e.g. solid wall pre-war construction) and the relative affluence of the population.
- Emissions from road transport are above the London average but below the national average. This can be attributed to the relative lack of public transport network and to the fact that Bromley has the largest road network of any London borough. Additionally, Bromley has relatively high rates of car ownership.

Figure 4: 2012 CO_2 Emissions by Sector



2.1. Industry and Commercial CO_2 Emissions

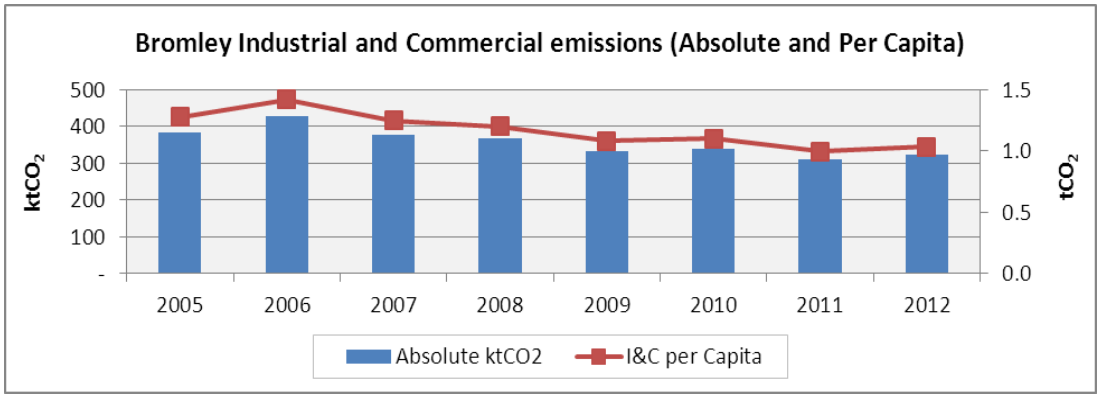
Industry and commercial CO_2 emissions are responsible for 24% of Bromley's carbon footprint, well below the Greater London and national average of 46% and 40% respectively. Table 2 sets out some factors relating to this.

Table 2: Bromley's Commercial Emissions Factors

• Relatively few industrial installations in the borough
• Effects of the recession on business energy consumption
• Energy intensive businesses being concentrated in other London boroughs

The borough had relatively low (absolute and per capita) commercial CO_2 emissions. Figure 5 shows commercial CO_2 per capita emissions plotted against total commercial emissions from 2005-2012.

Figure 5: Bromley's Industrial and Commercial CO_2 Emissions (Total and Per capita)



Total I&C emissions decreased by 15% since 2005 but increase by 5% between 2011/12.

Further examination of the decrease in commercial CO_2 emissions shows a 23% reduction in gas emissions since 2005, but a 14% increase between 2011 and 2012. There was a decrease of 9% in electricity since the baseline year, compared with an increase of 2% between 2011 and 2012. The commercial sector also saw a 41% decrease in emissions from "other fuels" (e.g. oil) since the baseline compared with an increase of 3% between 2011 and 2012.

2.2. Domestic CO_2 Emissions

Domestic emissions are responsible for 55% of Bromley's all-sector emissions: a much greater proportion than the figure nationally (36%) and Greater London (38%) reflecting the nature of the borough which is predominately residential with relatively little commercial activity. Since Bromley has less industrial and commercial emissions a greater proportion of "total" emissions emanate from residential property or from residents travelling to or from their homes.

The size of the borough, the nature of the housing stock and the affluence of the population all influence the domestic emissions of the borough. Table 3 sets out various factors for the comparatively high emissions in this sector.

Table 3: Bromley's Domestic Emissions Factors

- Bromley has the largest proportion of population over 65 years of age (17%), who typically use more heating than average.
- Over 18% of residents have incomes above £60,000 and affluent households generally spend more on energy.
- Since the 1980s there has been a limited supply of new housing (although this has increased since 2003) meaning that the borough has relatively few energy efficient houses.
- Over 73% of housing in Bromley is owner occupied which is often less energy efficient than Housing Association stock
- 50% of private rented sector dwellings were built before 1919 and a further 38% were built between 1919 and 1944, making it very energy inefficient
- 47% of housing is detached or semi-detached, which leads to wasted energy through exposed walls etc
- 17% of all housing is pre-1919 and 34% 1919-1945, meaning 51% of housing probably has solid walls, high ceilings and large windows making it much more energy intensive and difficult to improve
- Bromley is an outer London borough and typically has a slightly lower temperature than inner London, meaning more energy is used to heat homes.

Although total domestic CO_2 emissions have fallen by 7% since 2005, there was an increase of 11% between 2011 and 2012.

Per capita performance remains poor and emissions (2.4t/capita) continue to be higher than both the London average (1.9t/capita) and national average (2.2t/capita).

Figure 6: Bromley's Domestic CO_2 Emissions 2005-2012 (per capita and total)

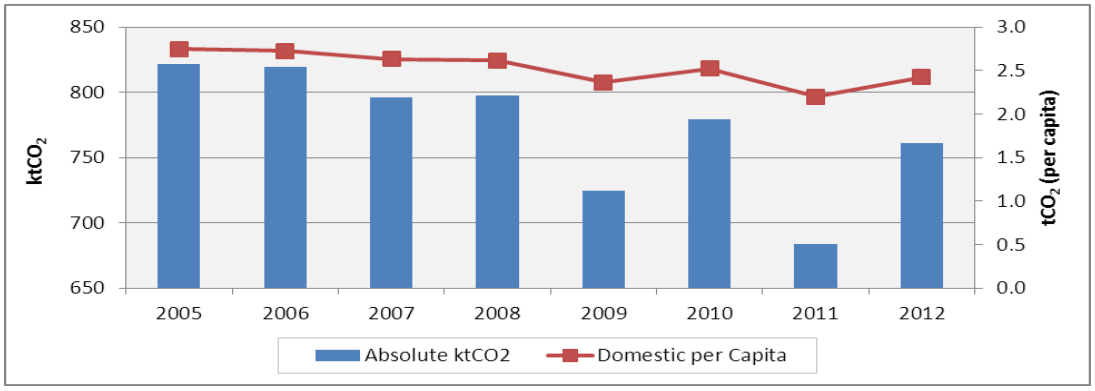
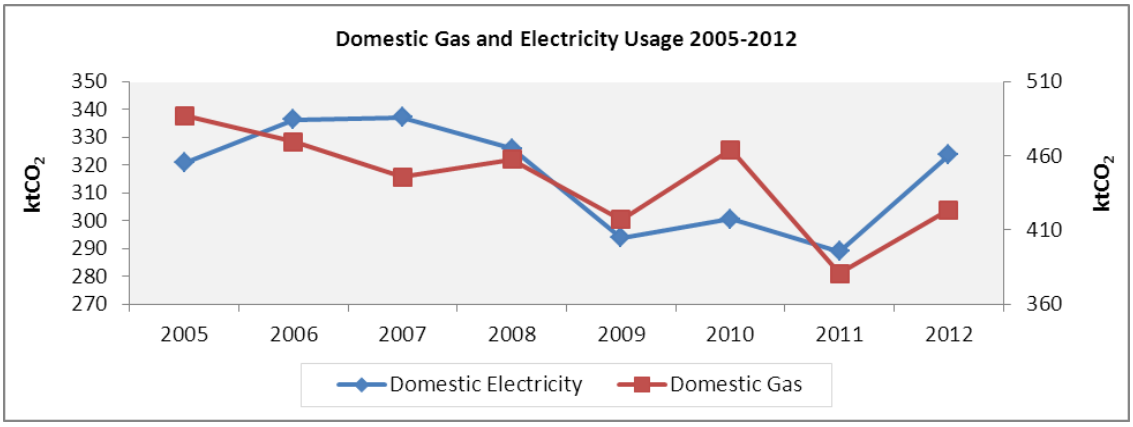


Figure 7 shows domestic electricity and gas consumption for 2005-2012. An initial spike in electricity use was followed by a decline from 2007, which was especially marked between 2008 and 2009. Gas use emissions experienced a steady decline followed by a small spike in 2008. Gas and electricity use emissions decreased by 10% between 2008 and 2009 but increased between 2009 and 2010. This trend was repeated for the following two years, with a fall in 2010/11 and an increase in 2011/12. It should be noted that the winters of 2011/12 and 2012/13 were longer and colder than previous less severe winter periods so that it is likely more energy was used and consequently CO_2 emissions may have been higher as a result.

Figure 7: Domestic Gas and Electricity Consumption 2005-2012



Since 2005, emissions from domestic electricity use increased by 1% and domestic gas emissions fell by 13%. Between 2011 and 2012, emissions increased by 12% for electricity and 11% for gas.

Reducing domestic emissions is difficult due to the lack of Council resources being devoted to this area and a lack of any specific statutory requirements for property owners to attain or meet specific standards in this respect.

Table 4 below lists the initiatives underway that may help reduce domestic emissions.

Table 4: Domestic Emissions Initiatives

- Providing a residents' Helpline through the Energy Saving Trust
- Funding and works under the GLA RE:NEW scheme: (an energy advice project with the aim of referring residents on to insulation schemes and other measures such as Solar PV, energy monitors, radiator panels, chimney balloons and water saving measures), finished in 2012 in line with the cessation of all other existing funding streams for improving energy efficient, all to be replaced by the Governments Green Deal Scheme.
- The introduction of the 'Green Deal' and ECO in 2012 , was heralded as a major initiative and boosts the funding and carrying out of energy efficiency improvement works for residential properties of all tenures as well as for business premises, but has to date proved ineffectual due to the complexities of the scheme, lack of support and lack of incentives involved resulting in minimal interest or take up. Recent revisions may lead to some increased installation of measures, together with a continuing investment and installation of measures under the associated ECO, (Energy Company Obligation).

2.3. Transport Emissions

Road transport emissions are responsible for 21% of LBB's total emissions, slightly below the national average of 24% but above the Greater London average of 17%.

On a per capita basis, Bromley's transport emissions (0.9t) are equal to Greater London's but significantly lower than the national figure of 1.5t per capita.

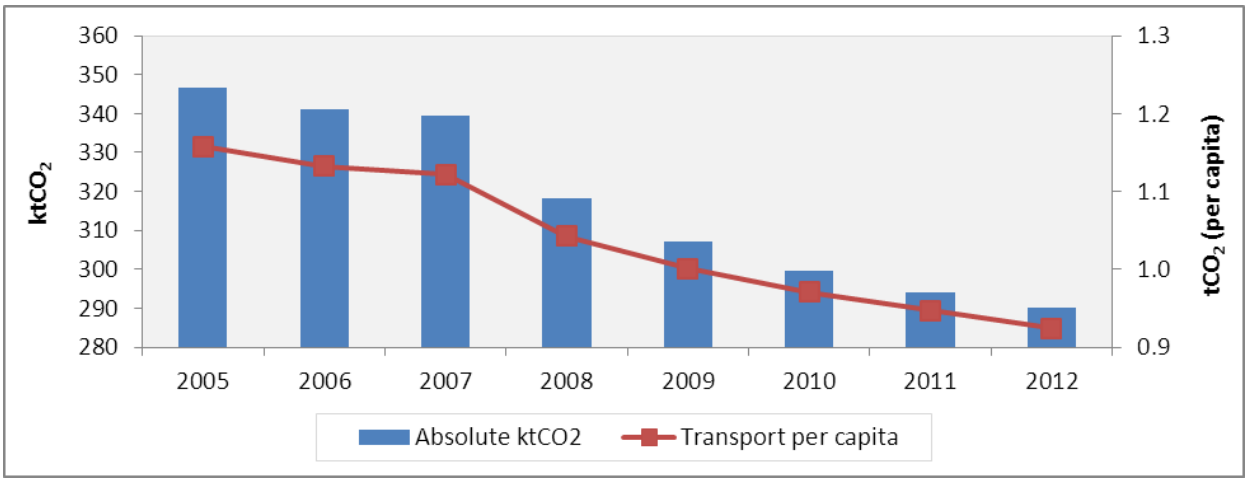
Bromley ranks 30th of all London Boroughs for transport emissions. Table 5 below sets out the factors that contribute to Bromley's transport related emissions.

Table 5: Bromley's Transport Emissions Factors

- Bromley has one of the least dense populations of any London Boroughs (1,992 people per km^2 in 2006), which leads to greater car use.
- Bromley is London's largest borough in terms of area and has over 800km of road network. Resulting in Bromley residents having the longest average, and the longest total, journey length compared with other London boroughs.
- Bromley has the third highest car ownership levels in London.
- Bromley lacks a secondary public transport network, with no underground or DLR service and limited access to Tramlink services.
- Apart from Bromley town centre, public transport accessibility levels are relatively low, particularly for orbital journeys.

Total Transport emissions decreased by 16% since 2005 but increase by 1.4% between 2011/12.

Figure 8: Bromley Transport Emissions (Total and Per Capita)



Reducing road transport emissions in Bromley is a difficult task as it requires large-scale behavioural change (e.g. encouraging modal shift). However, Table 6 below highlights initiatives underway in the transport sector that may help to reduce transport emissions.

Table 6: Bromley Transport Emissions Reduction Initiatives

- Council encourages travellers to make real choices about how they travel.
- Measures to address this include :
  - School and workplace travel plans
  - Station Access schemes
  - Provision of cycle routes and cycle parking
  - Bus priority measures and improved facilities for passengers
  - Reducing emissions from the Council's own and its contractors' vehicle fleets.
- The Council is currently examining the viability of significantly increasing the presence of car clubs in the borough.

3. COMPARING BROMLEY'S EMISSIONS

In line with national and London data (406 local authorities in England, Scotland and Wales), Bromley's total CO_2 emissions decreased (by 11%, 175kt) between 2005–2012 but increased (by 7%, 89kt) between 2011–2012.

Figure 9 shows that all-sector per capita emissions in Bromley are lower than the average for both Greater London and nationally.

Figure 9: Bromley, London & National Emissions 2005-2012

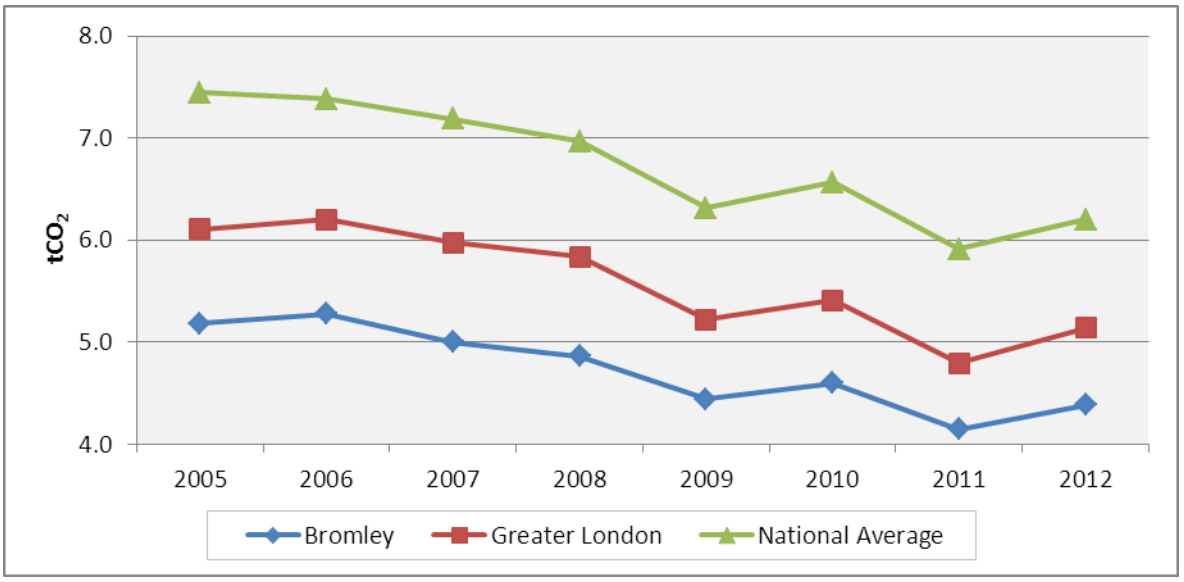


Figure 10 shows Bromley's per capita emissions compared with all the London boroughs.

LB Waltham Forest had the lowest per capita emissions at 3.4t, while the City of London had the highest with 197t per capita (due to high commercial emissions and low population).

LB Bromley, indicated in red, had the 17th lowest (Bromley was also ranked 17th in 2011).

Figure 10: Greater London per capita Emissions 2012

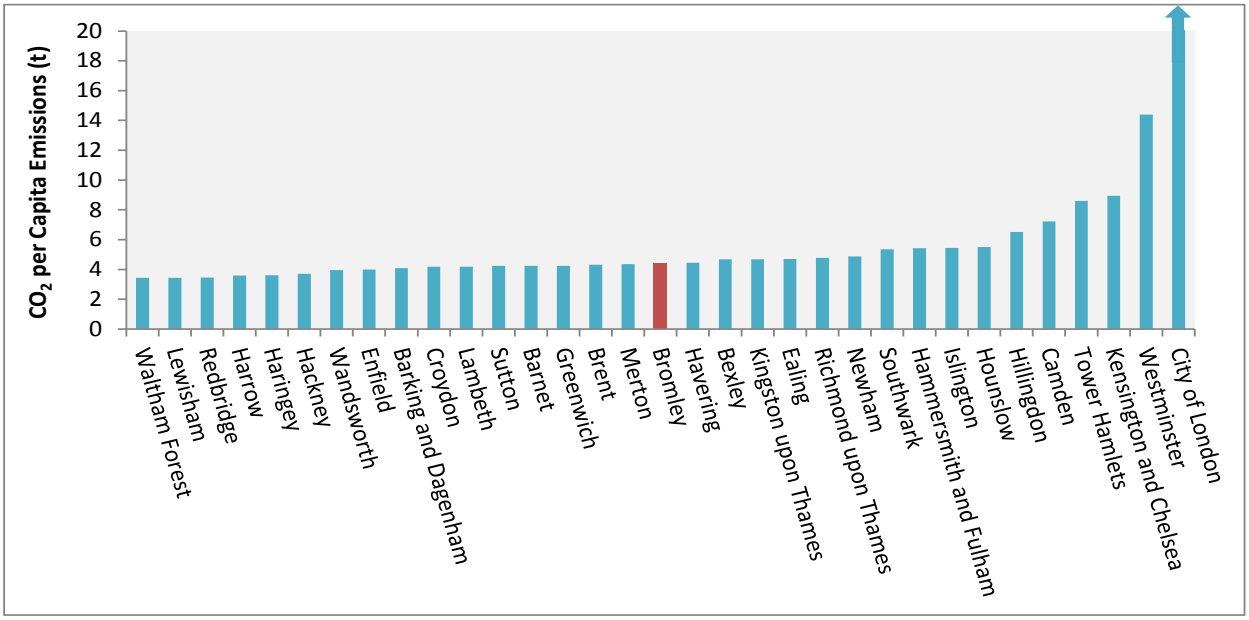
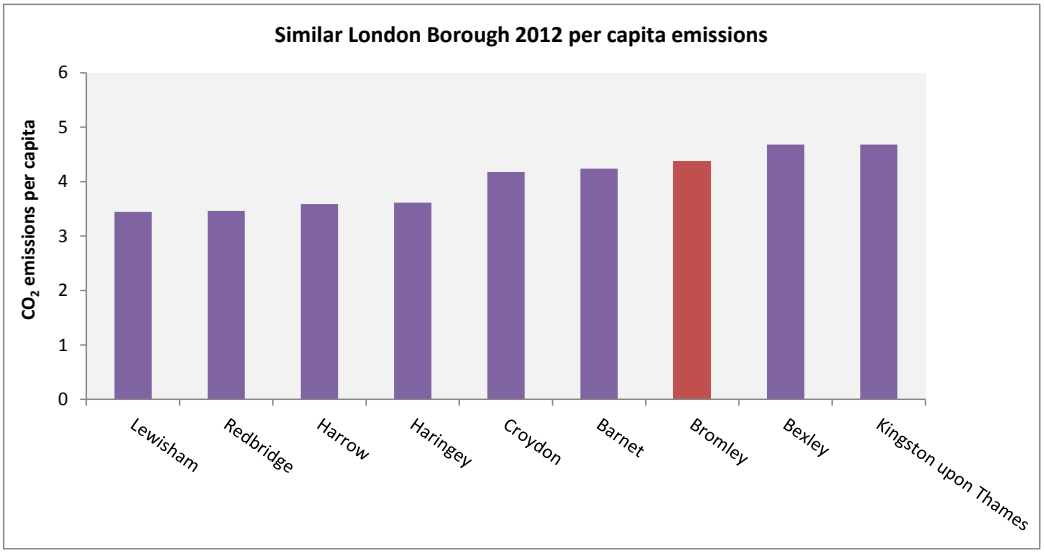


Figure 11 compares Bromley with boroughs with similar attributes. Of these, Bromley has the 7th highest per capita emissions but is broadly in line with the other comparable boroughs.

Figure 11: London Borough Comparison (2012 per Capita emissions)



3.1. Industry and Commercial Emissions

LB Bromley's Industry and Commercial emissions per capita were 1.0t in 2012, much lower than the London and national averages of 2.3t and 2.5t per capita respectively.

Bromley has the 5th lowest commercial emissions per capita, as illustrated in the Figure 12. This is attributable to the lack of large industrial installations – Bromley's commercial sector is typified by smaller service-related and retail businesses.

Figure 12: London Borough's Commercial per capita Emissions

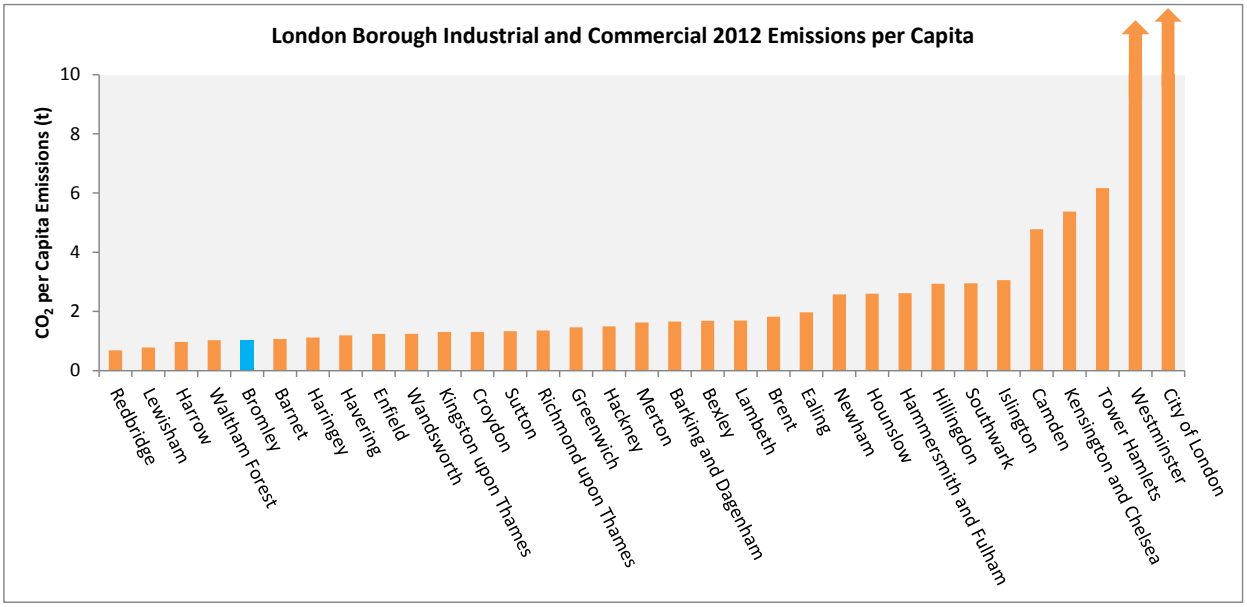


Table 7 shows Bromley, Greater London and National 2011 and 2012 total emissions compared with 2005 (baseline). Since 2005 emissions in Bromley and nationally have fallen by 15-16%. However, in Greater London emissions fell by only 4%. The relatively small reduction in Greater London is due to the large concentration of commercial businesses with the region.

Table 7: Industry & Commercial Emissions Comparison

	2005 (Baseline)	2011	2012	% change since 2005	% change since 2011
Bromley (kt CO_2)	383	310	325	-15%	5%
Greater London (kt CO_2)	20,192	17,574	19,456	-4%	11%
National Total (kt CO_2)	189,773	150,620	160,000	-16%	6%

3.2. Domestic Emissions

Bromley's domestic emissions, 2.4t per capita, are above the national and London average of 2.2t and 1.9t respectively. Figure 13 shows that Bromley has the 3rd highest domestic emissions per capita of all the London boroughs. It should also be noted that Bromley's "excess winter deaths" parameter is also above England and regional averages (http://www.apho.org.uk/resource/view.aspx?RID=142302).

Figure 13: London 2012 Domestic per capita Emissions

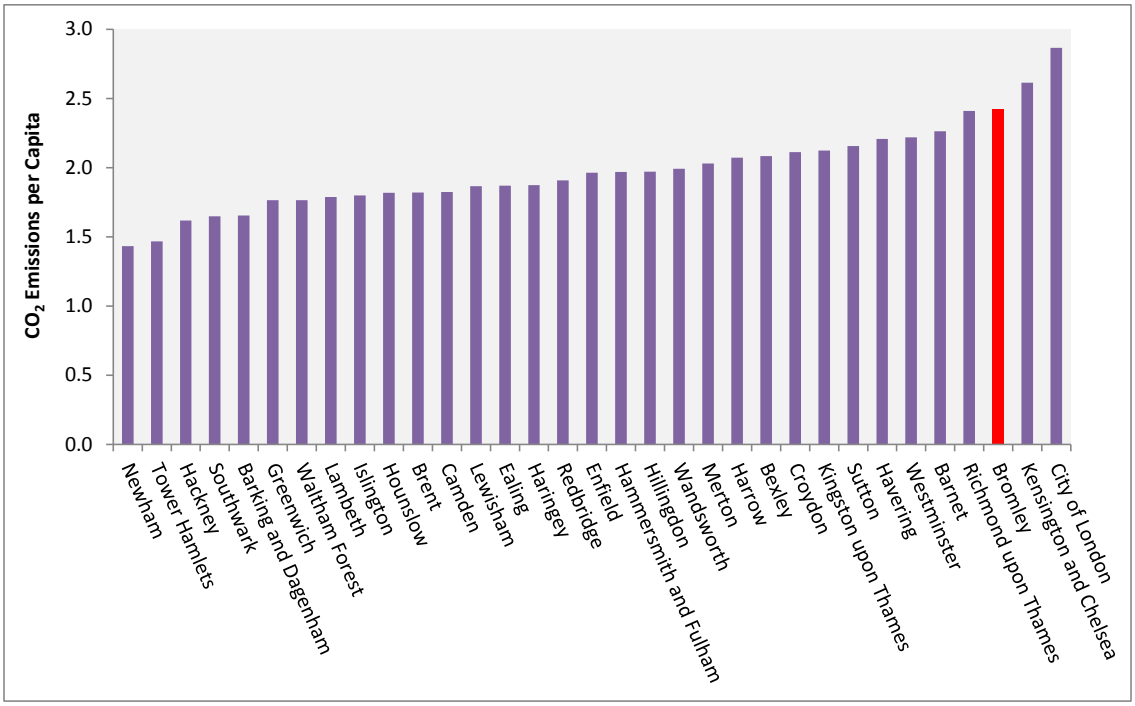


Table 8 shows Bromley, Greater London and National 2012 total domestic emissions compared with 2005 and 2011. Although there was an 11% increase in 2012 (compared with 2011), total emissions have fallen consistently in Bromley since 2005 (7%).

Table 8: Domestic Emissions Comparison

	2005 (Baseline)	2011	2012	% change since 2005	% change since 2011
Bromley	822	684	761	-7%	11%
Greater London	17,387	14,539	16,130	-7%	11%
National Total	155,488	129,015	141,999	-9%	10%

3.3. Bromley Transport Emissions

Car ownership rates in Bromley are high and, on a total basis, Bromley has the 4th highest emissions from road transport in the Greater London area. However, on a per capita basis, Bromley ranks 11th highest of the London boroughs at 0.92t/capita.

In general, Bromley's road transport emissions per capita are slightly higher than the London average (0.9t/capita) but are 0.5t per capita lower than the national average.

Figure 14: London Borough Transport Emissions per Capita (2012)

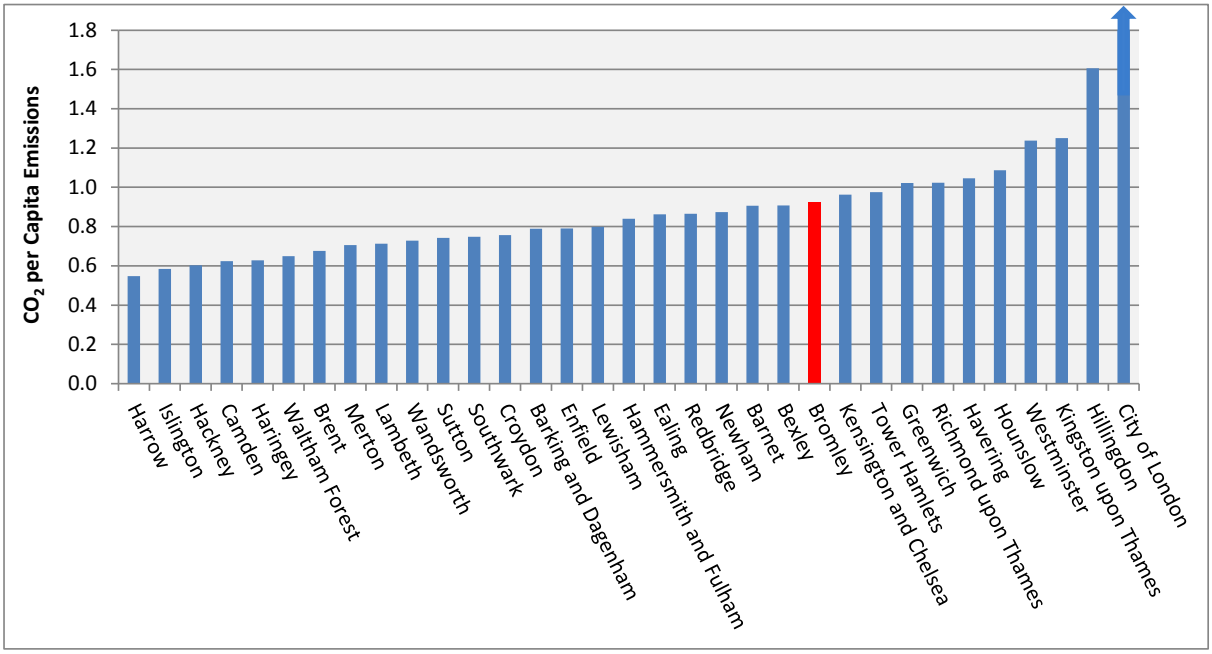


Table 9 shows Bromley, Greater London and National 2012 total transport emissions compared with 2005 and 2011. Bromley has experienced a 16% drop compared with 14% in Greater London and 11% nationally.

Table 9: Transport Emissions

	2005 (Baseline)	2011	2012	% change since 2005	% change since 2011
Bromley	347	294	290	-16%	-1%
Greater London	8,335	7,203	7,134	-14%	-1%
National Total	104,643	94,448	93,180	-11%	-1%

3.4. All-sectors Comparison (per capita)

Table 10 shows the relative positions between Bromley and the other 33 London councils in ascending order (i.e. the higher the ranking – with one being highest – the better comparative performance).

Bromley has remained towards the bottom of the league table for domestic emissions and close to the top of the table for commercial emissions. Emissions for transport have remained relatively steady at 23rd position.

Table 10: Bromley v London Borough Comparative Rankings (1 = best performer and 33 = worst)

	2005	2006	2007	2008	2009	2010	2011	2012
Industry & Commercial	3	8	5	3	5	4	5	**5**
Domestic	32	32	32	32	31	31	31	**31**
Road Transport	23	23	23	23	23	23	23	**23**
All sectors	**13**	**15**	**15**	**13**	**17**	**16**	**17**	**17**

3.5. Comparison with Previous Years

Figure 15 shows that emissions since the baseline year (2005) have fallen across all sectors. The largest drop has been in Road Transport with a fall of 20% since the baseline year. The smallest decrease has been in the domestic sector with a fall of 12%.

Figure 15: Per Capita % Change since 2005 Baseline

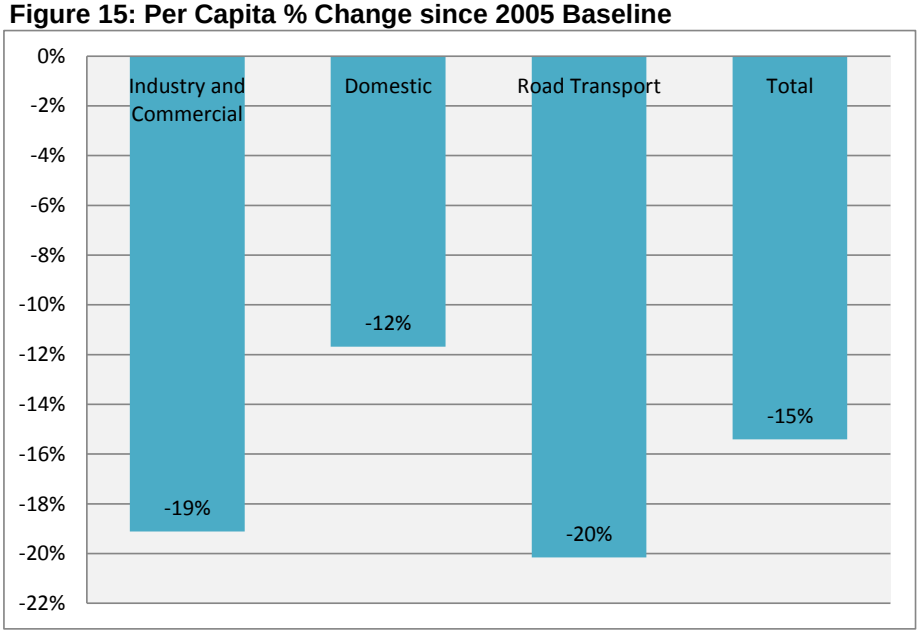


Figure 16 shows the difference in emissions experienced between 2011 and 2012. The Road Transport sector achieved a reduction in emissions (-2%) whilst Industry and Commercial and Domestic emissions increased by 4% and 10% respectively.

Figure 16: Per Capita % Change - 2012 compared with 2011

4. SUMMARY AND CONCLUSIONS

Bromley's 2012 CO_2 emissions data are encouraging given the notable reductions outlined above. However, these reductions appear to be part of an overall trend amongst all local authorities and, therefore, cannot be credited to any particular action conducted by LB Bromley. While the Council can influence local CO_2 emissions (e.g. through encouraging energy efficiency the housing sector or modal shift in the transport sector to reduce emissions and costs) it has no direct control (for instance housing is out-sourced to Affinity Sutton). Indeed macro-economic trends such as the state of the economy or changes in weather are more likely to be a material factor.

Bromley emitted 1.38Mt CO_2: 55% of emissions were from the domestic sector: 21% came from road transport and 24% emanated from industrial and commercial facilities. Overall, per capita emissions are slightly lower (i.e. better) than both the national and London borough average but per capita domestic emissions remain one of the highest (i.e. worst) in London. Road transport emissions are slightly higher than the London average and industrial/commercial emissions are below average. Table 11 summarises some of the key issues highlighted in this report.

Table 11: 2012 Outcome Analysis

Positive Outcomes	Negative Outcomes
• Total all-sector CO_2 emissions for Bromley have reduced by 11% (175kt) since 2005 • Per capita all-sector CO_2 emissions have fallen by 15% since 2005 and remain below the national and London averages • Per capita CO_2 emissions are lower than the London average for Industry & Commercial emissions and Road Transport emissions • Per capita road transport emissions have decreased by 20% since 2005 and by 2% compared with 2011	• Total all-sector CO_2 emissions for Bromley increased by 7% (89kt) from 2011 to 2012 • Per capita all-sector CO_2 emissions for 2012 are 4.4t, which is an increase of 6% from 2011 • Bromley has a higher than average per capita CO_2 emissions for the domestic sector (2.4t p.c.) and is the 3rd worst performer in London • Although transport emissions have reduced, there's been no improvement relative to other boroughs

To reduce emissions on a borough-wide basis, further efforts need to be made regarding domestic energy and road transport. As the local economy emerges from recession, care needs to taken to ensure that any economic growth is carbon efficient (de-coupling emissions growth from economic growth).

Table 12: Historic Sectoral summary and 2012 comparative data

Area/Year	Ind. & Commercial		Domestic		Transport		Total	
	total ($ktCO_2$)	/ capita (tCO_2)	total ($ktCO_2$)	/ capita (tCO_2)	total ($ktCO_2$)	/ capita (tCO_2)	total ($ktCO_2$)	p/capita (tCO_2)
LBB 2005	382.6	1.3	821.8	2.7	346.5	1.2	1,551.0	5.2
LBB 2006	428.0	1.4	819.7	2.7	340.9	1.1	1,588.6	5.3
LBB 2007	378.5	1.3	796.2	2.6	339.4	1.1	1,514.1	5.0
LBB 2008	366.8	1.2	797.6	2.6	318.1	1.0	1,482.5	4.9
LBB 2009	331.8	1.1	724.8	2.4	307.1	1.0	1,363.8	4.4
LBB 2010	340.0	1.1	779.2	2.5	299.6	1.0	1,418.7	4.6
LBB 2011	309.7	1.0	683.5	2.2	294.1	0.9	1,287.4	4.1
LBB 2012	**324.6**	**1.0**	**761.3**	**2.4**	**290.2**	**0.9**	**1,376.1**	**4.4**
2012 London	19,456.0	2.3	16,129.9	1.9	7,134.2	0.9	42,720.0	5.1
2012 National	159,999.8	2.5	141,999.3	2.2	93,180.0	1.5	395,179.1	6.2