Combined Authority Sustainability Benchmarking

Technical Report – annual analysis of metrics 2019

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Report information

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Disclaimer: This report represents the independent advice commissioned by Sustainability West Midlands and not necessarily that of the funders.

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

Our vision is that by 2020 businesses and communities are thriving in a West Midlands that is environmentally sustainable and socially just.

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

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Executive Summary

Sustainability West Midlands (SWM) is the sustainability delivery partner for the West Midlands Combined Authority (WMCA). This report is part of an ongoing support programme to help the WMCA integrate sustainability within its strategy and operations, drawing on good local and national practice.

This report provides an overview and analysis of the annual data used to underpin sustainability performance and monitoring in the WMCA area and how these compare to the eight other CAs areas in England. This is the third year of producing this monitoring report.

The key sustainability metrics we used are taken from various sources in line with the WMCA's sustainability priorities[1] as determined by its Environment Board and SWM's West Midlands 2020 sustainability roadmap.[2] These are economic productivity, carbon reduction, health inequality, air quality, renewable electricity generated, amount of waste recycled, percentage of households classed as being in fuel poverty and sites in positive conservation management. New additions to this analysis in 2019 includes an Emissions Intensity Ratio (carbon emitted per £m GVA) and a metric indicating the health impacts of air pollution. Data reflecting flood risk and water quality is also provided, but at this stage only for the WMCA and is not compared nationally.

The geographical areas from where the data are used were those that correlated most closely to each combined authority's Strategic Economic Plan or equivalent.

Summary of Results

Environment Progress
- The WMCA has reduced its overall and per capita emissions between the years 2010 to 2016 albeit slightly less than the average, but remains the CA region that emits more carbon than any other due to its size. It is also the region that has achieved the highest rate of economic growth, whilst still reducing carbon emissions.
- The West Midlands breached air quality standards on 46 days in 2017, the third highest CA, and breached standards ten days more than the average across all CAs. This is likely due to the dry summer of 2018.
- The West Midlands has generated much less electricity from renewables than the CA average, but saw a 14% increase in renewable generation between 2016 and 2017, on a par with the CA average.
- The West Midlands recycles slightly less of its non-household waste than the CA average although there was a small increase in recycling rates between 2016 and 2017.

- West Midland household waste recycling rates have generally declined over time and are lower than the CA average.
- The percentage of sites in positive conservation management has increased in the West Midlands since 2010, but remains low compared to the CA average.

Social Progress
- Health inequality is slightly lower in the WMCA than in other CA areas, but remains high overall and has increased between 2015 and 2016. The gap between male and female health inequality is low in the WMCA compared to other CA areas.
- The percentage of people who die as a result of exposure to particulate air pollution is higher in the West Midlands than the CA average, but has slightly declined since 2010.
- Fuel poverty levels in the West Midlands are worse than the average across all CAs and the number of people in fuel poverty in the WMCA has increased between 2015 and 2016.

Economic Progress
- The West Midlands is performing well in economic productivity compared to other CA areas with the highest economic growth rate and also has a slightly above average performance per head.
- The West Midlands emits slightly less CO_2 on average per £million GVA and has seen a 39% improvement in this since 2010, the second-most successful CA in this respect.

The below table provides a summary of the metrics including how they correlate to the relevant targets that the WMCA has in place and the ranking with other CAs.

Metric (Strategic link: PMF = WMCA Performance Management Framework, EBP = WMCA Environment Board Priority)	Latest figure in specified year	Ranking out of 9 CAs (Change compared to last year)	Rate of change since specified year	Rate of change ranking out of 9 CAs	WMCA target	Scale of challenge
Environment						
Total carbon emissions (PMF E.1) (EBP)	21,043 ktCO$_2$ (2016)	9 (-)	-20.1% (2010)	7 (↓2)	40% reduction from 2010 to 2030	By 2030, emissions should be ≤15,795 ktCO$_2$
Per capita carbon emissions (EBP)	5.1 ktCO$_2$ (2016)	4 (-)	-22.9% (2010)	6 (-)	-	-
Air quality (PMF E.2) (EBP)	46 days breached (2018)	6 (↑1)	+8 days breached (2010)	4= (↓1)	Reduction to 1 day breached by 2030	45 less days breached

Metric (Strategic link: PMF = WMCA Performance Management Framework, EBP = WMCA Environment Board Priority)	Latest figure in specified year	Ranking out of 9 CAs (Change compared to last year)	Rate of change since specified year	Rate of change ranking out of 9 CAs	WMCA target	Scale of challenge
						per year by 2030
Renewable electricity generation (EBP)	52,959 MWh (2017)	8 (-)	+68.9% (2014)	3 (↑1)	-	-
Waste Recycled – Household (EBP)	40.2% (2017)	6 (-)	-1.3% (2010)	8 (↓1)	-	-
Waste Recycled – Non-household (EBP)	34.8% (2017)	5 (-)	-1.7% (2014)	6 (↑2)	-	-
Sites in positive conservation management (EBP)	40.2% (2017)	8 (-)	+4.2% (2010)	7 (↑1)	-	-
Social						
Health inequality (males) (PMF P.14)	8.3 years (2016)	4 (↓1)	-0.5 years (2010)	6 (-)	Reduction in average health inequality gap by 5.3 years by 2030	Further reduction of 3.0 years required by 2030
Health inequality (females) (PMF P.14)	6.8 years (2016)	4 (-)	+0.3 years (2010)	4= (↓1)	Reduction in average health inequality gap by 3.9 years by 2030	Further reduction of 2.9 years required by 2030
Fraction of mortality attributable to particulate air pollution (NEW – EBP)	5.1% (2017)	8 (↑1)	-0.3% (2011)	5= (↑3)	-	-

Metric (Strategic link: PMF = WMCA Performance Management Framework, EBP = WMCA Environment Board Priority)	Latest figure in specified year	Ranking out of 9 CAs (Change compared to last year)	Rate of change since specified year	Rate of change ranking out of 9 CAs	WMCA target	Scale of challenge
Fuel poverty (EBP)	12.6% (2016)	6 (↑1)	-0.4% (2011)	2= (↓2)	-	-
Economic						
Total economic productivity (EBP)	£83,894m (2017)	1 (-)	+35.9% (2010)	1 (-)	-	-
Per capita economic productivity (PMF O.1)	£23,731 (2017)	4 (-)	+28.1% (2010)	1 (-)	£33,604 by 2030	41.6% increase required by 2030
Emissions intensity ratio (NEW – EBP)	215.4 tCO$_2$ per £ million GVA (2016)	5 (-)	-39.2% (2010)	2 (-)	-	-

Key to colours:

Green = Rank 1-3 Near to, or best in class and where this a set target making good progress	**Amber = Rank 4-6** Progress but improvements required to be best in class, or to meet target if set	**Red = Rank 7-9** Significant improvements required to be best in class, or meet target if set

Recommendations for the WMCA

These are discussed in more detail in the main report and include: establishment of more integrated targets, establishing better low carbon business, flood risk and natural environment metrics and taking action on climate adaptation, clear accountability and integrated working, clear annual reporting, resource to drive objectives and reporting of metrics into the WMCA and partners project systems and more action required on air quality, health inequality, fuel poverty, natural environment and recycling.

1   Introduction

Sustainability West Midlands (SWM) is the sustainability delivery partner for the West Midlands Combined Authority (WMCA). This report is part of an ongoing support programme to help the WMCA integrate sustainability within its strategy and operations, drawing on good local and national practice.

This report provides an overview and analysis of the annual data used to underpin sustainability performance and monitoring in the WMCA area and how these compare to the eight other CAs areas in England. This is the third year of producing this monitoring report.

The key sustainability metrics we used are taken from various sources in line with the WMCA's sustainability priorities[3] as determined by its Environment Board and SWM's West Midlands 2020 sustainability Roadmap.[4] These are economic productivity, carbon reduction, health inequality, air quality, renewable electricity generated, amount of waste recycled, percentage of households classed as being in fuel poverty and sites in positive conservation management. New additions to this analysis in 2019 includes an Emissions Intensity Ratio (carbon emitted per £m GVA) and a metric indicating the health impacts of air pollution. Data reflecting flood risk and water quality is also provided, but at this stage only for the WMCA and is not compared nationally.

Our other annual benchmarking report[5] looks at how the WMCA is performing against the other combined authorities (CAs) in England in terms of reported sustainability activity in leadership, strategy and delivery and will be updated again in autumn 2019.

1.1   Background to developing sustainability metrics for the WMCA

To deliver our mission, we have developed a set of sustainability priority actions for the West Midlands based on collaborative research worth around £1 million and the support of over 200 local leaders and stakeholders in 2010.

Our 'West Midlands Roadmap to a Sustainable Future in 2020[6] identifies the current challenges facing the West Midlands, as well as the priority actions needed to make change happen. Through cross-sector working across local authority boundaries, we look to create a region with more low carbon jobs, reduced levels of carbon and improved life expectancy. SWM is currently in the process of re-designing and extending its Roadmap so that it is fit for purpose from 1 January 2020. As SWM has been providing advice to the WMCA as it has developed its new Roadmap, there is likely to be even closer alignment between the WMCA monitoring and the new independent regional Roadmap from this point.

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[3] https://www.sustainabilitywestmidlands.org.uk/resources/wmca-environmental-priorities/
[4] https://www.sustainabilitywestmidlands.org.uk/priorities/
[5] https://bit.ly/2xP6FET
[6] https://www.sustainabilitywestmidlands.org.uk/priorities/

Since 2010 we have been the only region in the UK to have a clear vision, plan, action and annual monitoring[7] to help achieve a more sustainable future. This has been possible due to our independent nature, our evidence based approach and the support of a range of partners. We will continue to do this post-2019 once the new Roadmap is implemented.

West Midlands Roadmap to a Sustainable Future in 2020
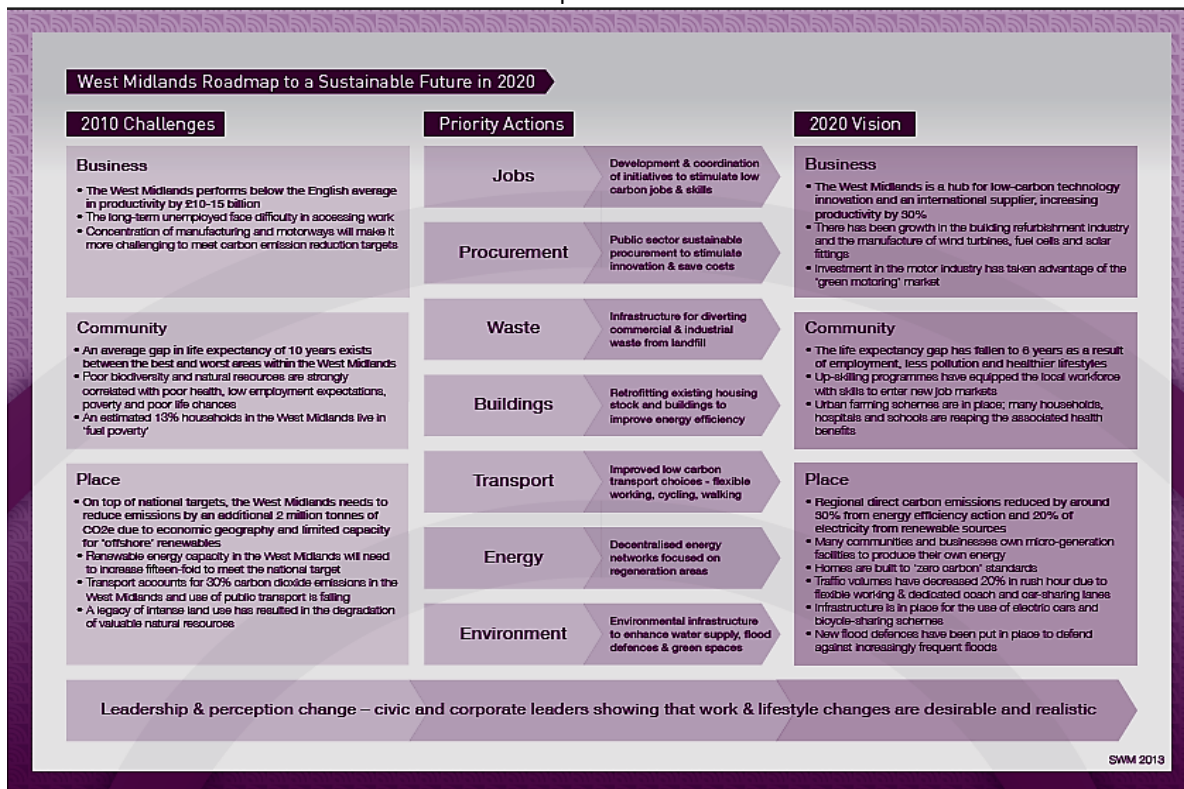
The Roadmap and monitoring is important to help provide certainty and focus for local joint action and demonstrates commitment and credibility for inward investors. We are often requested to provide an independent voice and view on sustainability progress and opportunities within the West Midlands to national and international audiences.

This roadmap was used as the basis for ensuring sustainability was integrated into the WMCA Strategic Economic Plan (SEP) in June 2016. For example:
- All three of the Roadmap objectives of economic productivity, carbon reduction and healthy life expectancy formed part of the nine SEP objectives
- There is a carbon reduction target of 40% by 2030 against a 2010 baseline
- Environmental Technologies formed one of the four priority business sectors
- The Performance Management Framework (PMF) contained the Roadmap outcome indicators of economic productivity, carbon reduction and healthy life expectancy and, in addition, indicators on air quality and waste.

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[7] https://www.sustainabilitywestmidlands.org.uk/resources/swm-roadmap-2020-monitoring-report-2018/

In July 2016, SWM was officially recognised as the sustainability delivery partner for the WMCA. This involves continuing to provide strategic advice, evidence, research and events to support the integration of sustainability within the WMCA and the continued alignment of our members, networks and partners' good practice to accelerate the delivery of the SEP to create a better future.

In early 2019, as part of our support programme, we used our annual Roadmap monitoring and research to help update the WMCA PMF monitoring and reporting for the third time (see below for example). This will feature as part of the annual State of the Region report.

Example of WMCA PMF, WMCA AGM July 2017

WEST MIDLANDS COMBINED AUTHORITY DRAFT PERFORMANCE MANAGEMENT FRAMEWORK

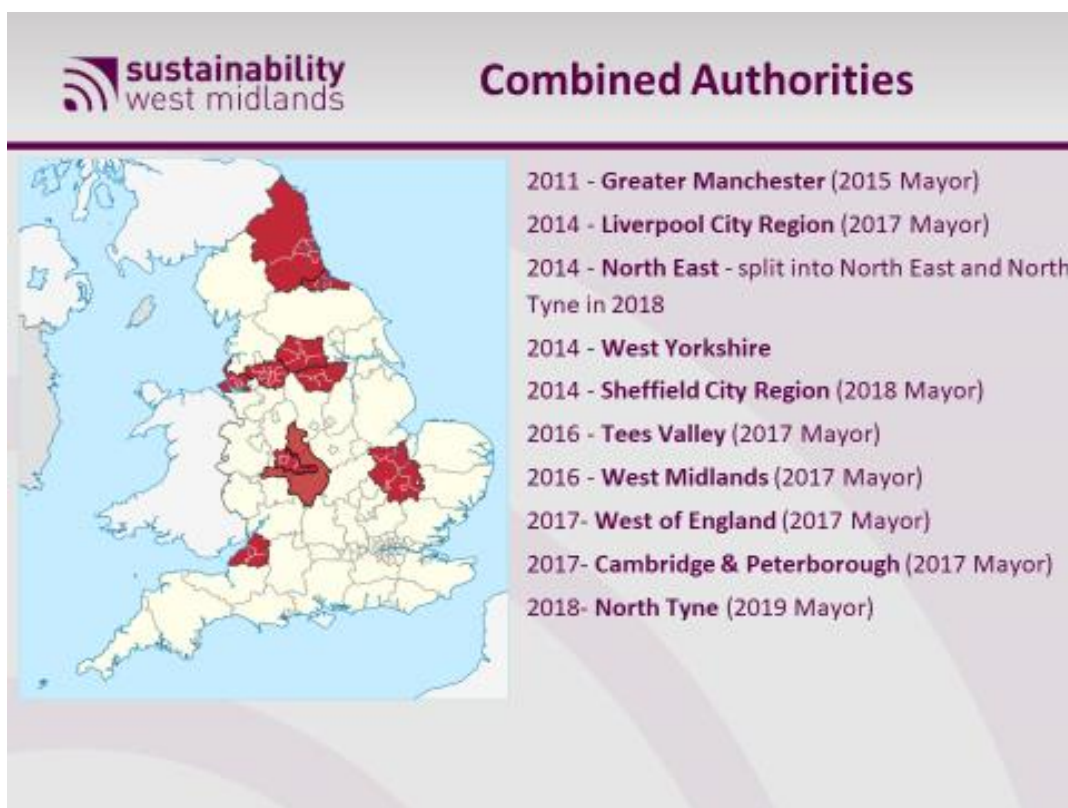| Outcomes	Measures of Success	Where we are now	Change over the last year		Direction of Travel Relative to UK average since 2013		Scale of the Challenge
ECONOMIC GROWTH - Improved GVA for the region in line with the UK average	O1. GVA per Head	£21,537	+£442		+7.0% WMCA +5.8% UK		+£4,054 GVA per head
	B1. GVA per employee	£43,706	+£28		+£2,781 +6.8% WMCA +2.4% UK		+£19,532 GVA per employee
	B2. GVA in transformational sectors	£71.3bn	+£2.4bn		+£6.2bn +9.0% WMCA +7.4% UK		£40.7bn GVA
BUSINESS - Improved the productivity of our businesses focussing on our growth sectors	B3. No. of Business Births	22,430 business births 55 per 10,000 population	+3,485 business births +15.5% WMCA +8.5% UK		+3,625 business births +19.3% WMCA +10.6% UK		59 per 10,000 population +1,458 births per annum
FISCAL - Secure better for less from our public services	B4. Jobs in Transformational Sectors	1.27m	+55,000 jobs +4.6%		+82,000 jobs +6.9% WMCA +4.9% UK		+194,400 jobs
	B5. Total Jobs	2m	+54,200 jobs		+101,000 Jobs +5.0% WMCA +4.9% UK		+400,000 Jobs
	B6. Employment Rate	68.8%	+0.4pp		-1.55pp WMCA -2.7pp UK		78.9% US-11pp
	F1. Income & Exp. Balance	-£4.5bn	+£0.6bn		+£6.6bn +15.4%		No fiscal gap +£4.5bn
PEOPLE - Improved Life Chances for all	P1. – Reduce % of people in top 10% most deprived areas	20%	+1.0pp		-9.9pp WMCA +0.05 pp UK		10% of people
	P2. – Better employment, health and wider outcomes for people with complex needs	To be developed					
	P3. (i) Average earnings	£27,151	+5.1%		+4.9% WMCA +4.5 UK		+1,062
	(II) % of employees earning above UK living wage	To be developed					
SKILLS - Improved skill levels at all ages so that people have the skills and qualifications to access jobs. Ignite /Retune /Accelerate	P4. % Working Age Population (WAP) with No Qualifications	13% 328,400 people	-1.5 pp -36,200 people		-119,867 people 1.6 pp WMCA -1.3pp UK		+ 4.7 pp + 119,867 people
	P5. % Working Age Population with NVQ1	12 % 301,600 people	+0.1 pp + 3,700 people		9,200 people 0.5 pp WMCA -0.9pp UK		Ahead of UK + 3 pp 24,905 people
	P6. % Working Age Population with NVQ2	16.8% 423,800 people	+ 0.2 pp + 5,200 people		7,300 people 0.5 pp WMCA -0.9pp UK		Ahead of UK + 0.9 pp +21,905 people
	P7. % Working Age Population with NVQ3	16.3% 410,400 people	-0.3pp - 8,700 people		-25,600 people 1.2 pp WMCA -0.3pp UK		+ 0.8 pp +21,290 people
	P8. % Working Age Population with NVQ4+	30.4% 774,300 people	-0.03pp -2,700 people		+66,300 people 2.8 pp WMCA +3.1 pp UK		+7.6 pp +155,010 people
	P9. No. of Apprenticeships starts	42,040	-1,190 -2.8%		+6,030 +16.7% WMCA +15.9% England		+42,219 per annum
	P10. Schools above national average GCSE pass rate A*-C including Maths and English)	46%	49.5% -2.5pp WM Met -3.5pp England		52.6% -6.6pp WMCA -4.1pp England		+ 7.5% schools
	P11. NEETs aged 16-18	4,420 (4.4%)	-1,450 -24.7%		1,950 30.5% WM Met -19.9% England		4.3% +228 NEETS
	P12. Healthy Life Expectancy (HLE) at Births Males & Females	Males (M) = 58.3 years Females (F) = 60.9 years	+0.03 years +0.4 years		0.6 WM Met WM Met -0.3 years England 0.01 years WM Met -0.2 years England		63.4 years 64.1 years
	P13. Reduced inequality in HLE for Males & Females	To be developed					
HEALTH - Better quality of life for all: improved health (inc. Mental health) and well being	P14. Health inequality gap by years between most and least deprived areas	M = 7.4 years F = 9 years (WM Met)	M – +1.2 F = -0.9		M = +1.3 F = 1.3		No gap Reduce gap by 7.2 years for males and 9 years for females
	P15. Employment rate gap for those with in contact with secondary mental health services	58.9 %	-0.6pp		+1.5pp WMCA +0.01pp England		Ahead of England + 8.8pp (67.2%)
	P16 – Rates of suicide	10.1	+0.4		3.a WMCA +2.2 England		No suicides -610 suicides
	P17 – % Physically Inactive Adults	26.5% WMCA					22% +80,534 participants
CRIME - Reduced offending and re-offending	P18 – No of Offenders	32,008 7.9 offenders per 1,000 population	-1,364 -4.1%		-7,170 -7.6%		Below the national average
	P19 – Re-offending rates (per 100,000)	26.9% (2014)	+0.3p		-0.1pp WMCA -0.3p Eng.		Ahead of England – 0.55pp
	P20 – Number of first time entrants to Youth Justice System	454	+1.3%		3.2% WM Met 17.6% Eng.		-88 first time entrants
	P21. Youth Claimants aged 18-24	14,805	+1,515 +11.4%		11,240 43.2% WMCA 46.4% UK		-4,781 youth claimants -32%
	P22. Claimant Count (18-64)	47.70%	+5,085 +8.1%		35,755 34.6% WMCA 37.5% UK		- 16,957 claimants - 27%
PLACE ACCESSIBILITY- Improved the connectivity of people to businesses to jobs and markets	PI1. Broadband Connectivity	93.7%	+2.3pp		+2.4pp 7 MET +14pp UK		100% +75,793 premises
	PI2. % residents able to access 3 or more strategic centres including Birmingham City Centre, accessible by public transport within 45 mins travel time in the am peak	41% (WM Met) 1.13m premises	1.3pp		3.2pp		75% +34pp
	PI3. Journey time reliability	To be developed					
INFRASTRUCTURE - improved the quantity of high quality readily available development sites	PI4. Mode Share of all Journeys: i). Mode Share of all journeys by car, public transport, cycling & walking ii). Percentage of car journeys non-single occupancy	Car (64%) Public Transport (11%) Walk (22%) Cycle (1%) Taxi (2%) 82%	Car +1% Public Transport (2%) Walk No change Cycle No change Taxi +1% No change				45% car mode share Car (- 19%)
	PI5. No./ha available for housing developments	To be developed					
	PI6. No./ha available for employment development sites	To be developed					
SUSTAINABILITY - Resource efficient economy to stimulate new technology and business	PI7. Land Uplift value	To be developed					
	E1. CO2 emitted within SEP area by transport, businesses and homes	21,564 ktCO2 (2014)	-167 ktCO2 -0.8%		-1.6% WMCA -3.3% UK		-7,661 ktCO2
	E2. No. of days poor air quality per year (rated 4 or higher on the Daily Air Quality Index)	40 days	-12 days		43 days WMCA 36 days UK		-40 days

1.2 Background to benchmarking sustainability metrics for the WMCA

As part of our contribution to updating the annual monitoring for the WMCA, we also looked at benchmarking where possible against suitable metrics. As a result, we commissioned additional work to look at how the WMCA area was performing compared to the other eight CA areas in England. In late 2018, this became nine CAs with the North East CA splitting into North East CA and North Tyne CA. The latter went onto have an elected Mayor in 2019. For the purposes of this report and to enable comparisons between years we have kept the North East CA as one unit. We will review this approach in future monitoring reports.

The WMCA has measured and embedded four key aspects of sustainability as part of its operations and programmes: carbon emissions, health inequality, air quality and economic productivity across the whole geography. The targets are:

- 40% reduction in absolute carbon emissions from 2010 to 2030
- Reduction in the number of days EU air quality standards are breached to one day by 2030
- Reduction in average male health inequality gap by 5.9 years by 2030
- Reduction in average female health inequality gap by 3.9 years by 2030
- £33,604 per capita GVA by 2030

The WMCA Environment Board has recently established additional priorities partly based on recommendations of the previous iterations of these reports. These are:

- Recycling of household and non-household waste
- Sites under positive conservation management

- Reducing the number of homes in fuel poverty
- Renewable energy generated
- Increase total GVA
- Closer analysis of the amount of carbon emitted per £ million GVA.
- Improvements to water quality
- Management of flood risk

This report analyses data that conveys each of these metrics and provides an indication of the scale of the challenge that the WMCA faces in terms of meeting its targets and what it may need to consider when commissioning and implementing projects and programmes. It complements the WMCA's Performance Management Framework which exists to monitor all the targets the WMCA is measuring. Other points to note include:

- SWM has included analysis of a new metric reflecting the impact of air quality on health: 'Fraction of mortality attributable to particulate air pollution.' SWM believes that, given the granularity and spatial coverage of this dataset, this is better to use to perhaps establish a new target relating to air quality to supplement the existing one which is useful as it has a basket of daily air quality indicators, but the data reflects a less useful geographical coverage.

- Following liaison with the Environment Agency, we could not obtain complete data for the metrics reflecting water quality and flood risk in time for inclusion in this report. This will be a priority for next year (see recommendations).

- We have removed the Access to Woodlands metric in this year's analysis. This is for two primary reasons: one, it is not deemed to be a WMCA Environment Board Priority. Two, the data are only updated every three years and consequently there would be no change in the analysis this year, compared to last year's report.

Inclusion of the new indicators addresses part of a recommendation in the last two reports to include additional metrics that provide a greater indication of overall sustainability progress within each CA's area.

The next step, as outlined in the recommendations, will be for the WMCA to formerly establish new targets and recognise these in its PMF and to continuously measure these in the same way that carbon emissions, air quality, health inequality and economic productivity are already measured.

1.3   Structure of this report

This report compares the WMCA to eight other CAs in terms of their progress on the above sustainability metrics to provide a picture of progress and to further emphasise the extent of the challenge it faces to meet its sustainability related targets. The rest of this report sets out the results and recommendations for the WMCA and a methodology is included in an annex.

2 Results: comparison between CAs

This section outlines how each of the nine combined authority areas are performing against the series of key metrics related to sustainability. The WMCA monitors progress against:
- Carbon emissions (absolute)
- Air pollution
- Health inequality (male and female)
- Economic productivity (per capita)

It's Environment Board has identified the additional priorities of:
- Carbon emissions (per capita)
- Renewable energy generated
- Household and non-household waste recycled
- Sites in positive conservation management
- Water quality
- Flood risk
- Households in fuel poverty
- Economic productivity (absolute)
- Carbon intensity (CO_2 emitted per £ million GVA)

We have also included in this report analysis of the following metrics:
- Fraction of mortality attributable to particulate air pollution (to supplement the air quality metric already analysed)

Data for metrics reflecting Environment Board Priorities that we could not obtain for this report on a national scale are:
- Water quality
- Flood risk

To determine the scale of the challenge that the WMCA must meet to achieve its associated targets and to determine progress to date, SWM has analysed the WMCA's progress against 14 of these metrics versus the other eight combined authority areas. The following sections summarise the key findings and for each metric we have included a league table that ranks each combined authority in order from first to ninth according to both its absolute value in the latest available year and how much it has progressed between the baseline year and the latest available year. With regards to the latter, green coloured font emphasises a change for the better and red a change for the worse. The tables also show how each CA has improved or declined its league position compared to last year's report (represented by an arrow, for example (↑2) represents a rise of two places in the table compared to last year).

It should be noted that in many cases the different geographic scales and industrial and transport networks influence the sustainability metrics of the different CA areas which are unlikely to change dramatically. However, for many metrics such as recycling or carbon emissions per capita there could be more dramatic differences. Also, the sustainability

metrics variation reinforces the need for continued devolution of power to allow more tailored local responses.

2.1   Environment: Carbon emissions

How can and why should the WMCA fight the causes of climate change?
One of the main causes of climate change is the emission of greenhouse gases. Through changes in operations and behaviours, carbon emissions are the easiest of these gases to mitigate and can contribute to minimising the negative social and economic impacts of climate change such as floods and heatwaves.

Influencing factors: Due to its size, the fact that it's the centre for UK manufacturing and has concentrated networks of motorways crossing through the region, the WMCA produces the largest amount of CO_2 compared to other CAs. Much of the changes in CO_2 reduction are driven by national policy around the decarbonisation of our energy supply. However, the local delivery of business support, building standards, retrofit of existing houses, local energy generation and recycling of waste all play a part.

Target: The WMCA has committed to reducing its carbon emissions by 40% from 2010 to 2030. This is currently being reviewed to reflect the new international and national evidence published in the last year.

Current progress: The WMCA has reduced its overall and per capita emissions between the years 2010 to 2016 albeit slightly less than the average, but remains the CA region that emits more carbon than any other due to its size spanning three Local Enterprise Partnerships. However, it is also the CA area that has experienced the largest economic growth, while still reducing carbon emissions.

Local good practice: Tamworth and Redditch council areas emit the smallest amount of CO_2, both per capita and in absolute terms. Tamworth has also decreased emissions the most since 2010.

Local support required: Rugby council area emits a disproportionate amount of CO_2 per person, followed closely by North Warwickshire. Both have made poor progress in reducing emissions since 2010, compared to most other local authority areas within the CA geography.

Recommendations: Use learning between smaller districts to share good practice between locations such as Rugby and Tamworth. In the larger emitting LAs such as Birmingham, there is potential for rollout of energy efficiency and renewable energy programmes to ensure the target is met.

- By 2016, which is the latest available data, areas making up the WMCA geography have reduced their carbon emissions by 20.1% since 2010. This is slightly lower than the average reduction in emissions across the nine combined authorities, which stands at 23.8% (figure 1).
- WMCA emissions stood at 21,043 $ktCO_2$ in 2016, more than double the nine combined authorities' average of 10,187 $ktCO_2$ (figure 2). However, it is recognised that the WMCA is one of the largest and most urbanised combined authority areas.
- Per capita emissions measure emissions per person which means that factors such as the extent of urbanisation and population density are accounted for; it is therefore a metric that is more comparable region by region than absolute total emissions. Per capita emissions in the West Midlands CA stood at 5.1 $ktCO_2$ in 2016, lower compared to the nine combined authority area average which was 5.9 $ktCO_2$ (figure 3). This reflects that the West Midlands CA is performing positively and emits proportionally a lower quantity of emissions when considering its dense population and other factors (such as presence of high-use roads) when compared to other CA areas that may emit similar amounts of CO_2 but with quantifiable reasoning.
- However, between 2010 and 2016, per capita emissions in the West Midlands CA have decreased by 1.5 $ktCO_2$, which is not as fast as the average 2.1$ktCO_2$ decrease across all combined authorities (figure 4).

Figure 1: % change in carbon emissions in Combined Authority areas (negative numbers = a reduction in CO_2 therefore progress made)
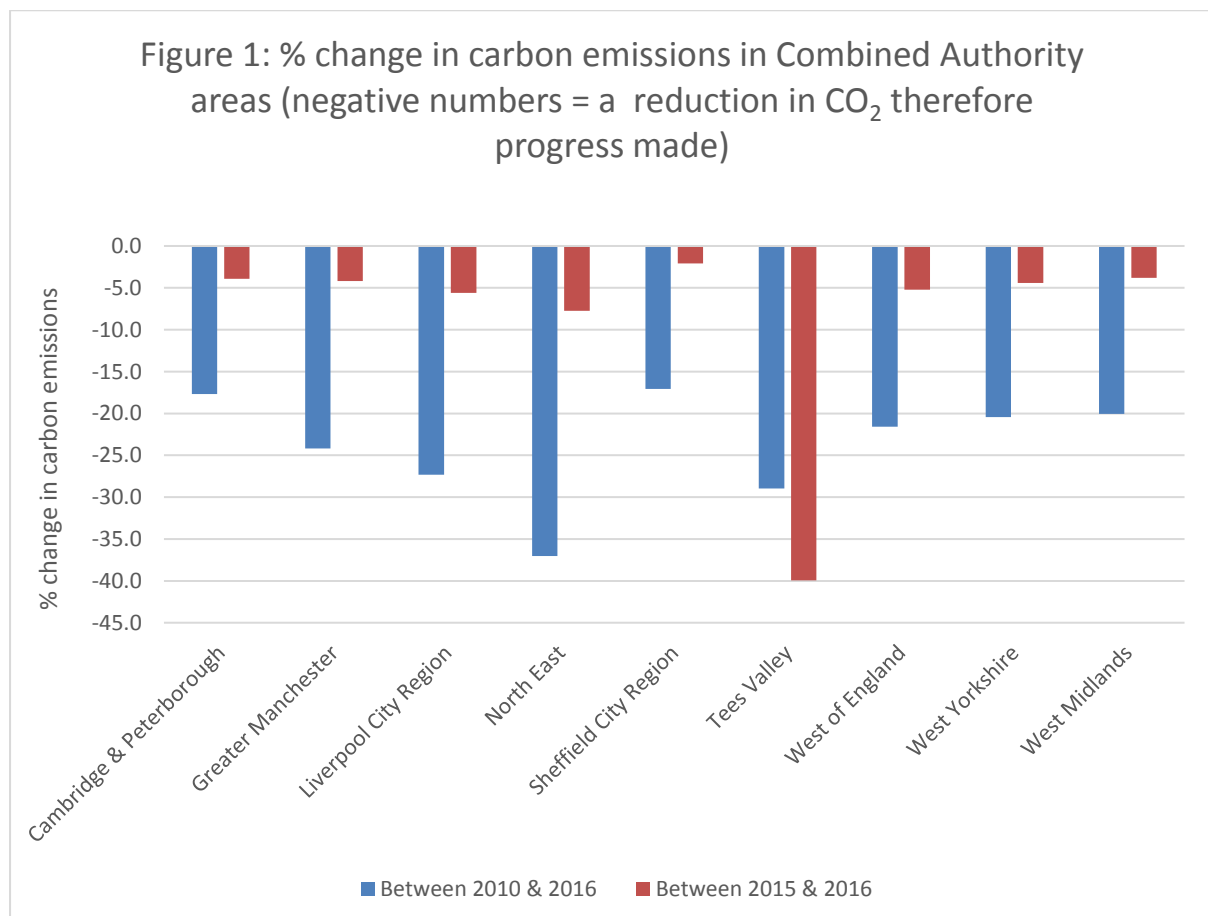
Figure 2: Total carbon emissions in West Midlands CA compared to the average for all nine combined authorities

Figure 3: Per capita carbon emissions in West Midlands CA compared to the average for all nine combined authorities

Figure 4: Change in per capita carbon emissions in Combined Authority areas (negative numbers = a reduction in CO_2 therefore progress made)
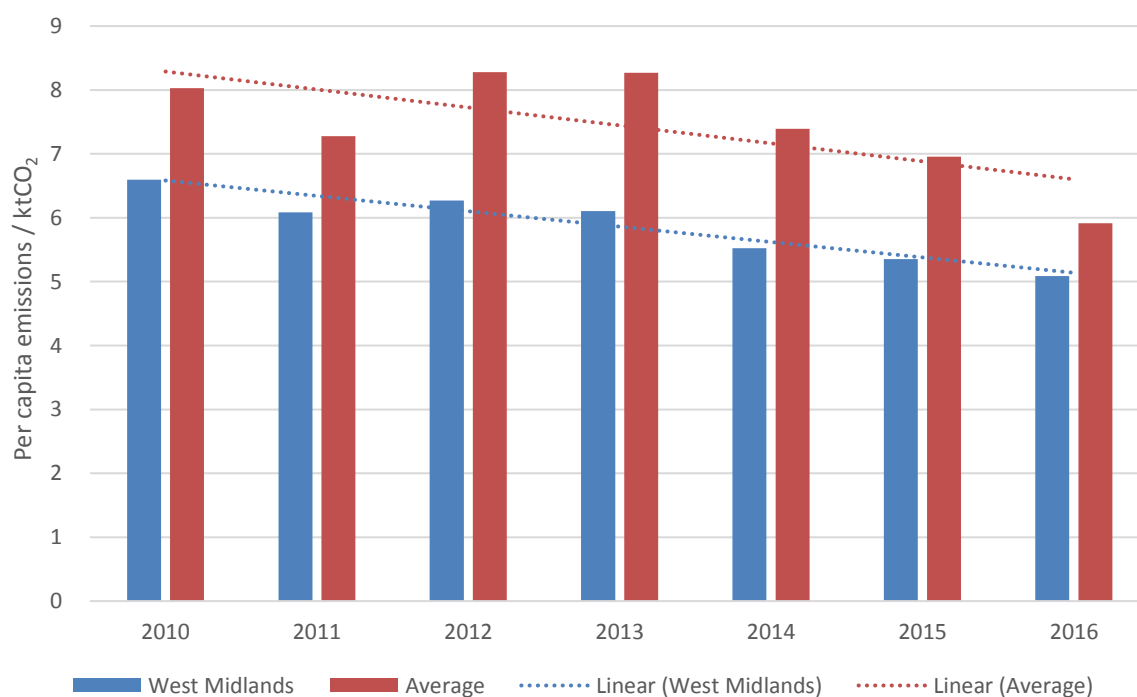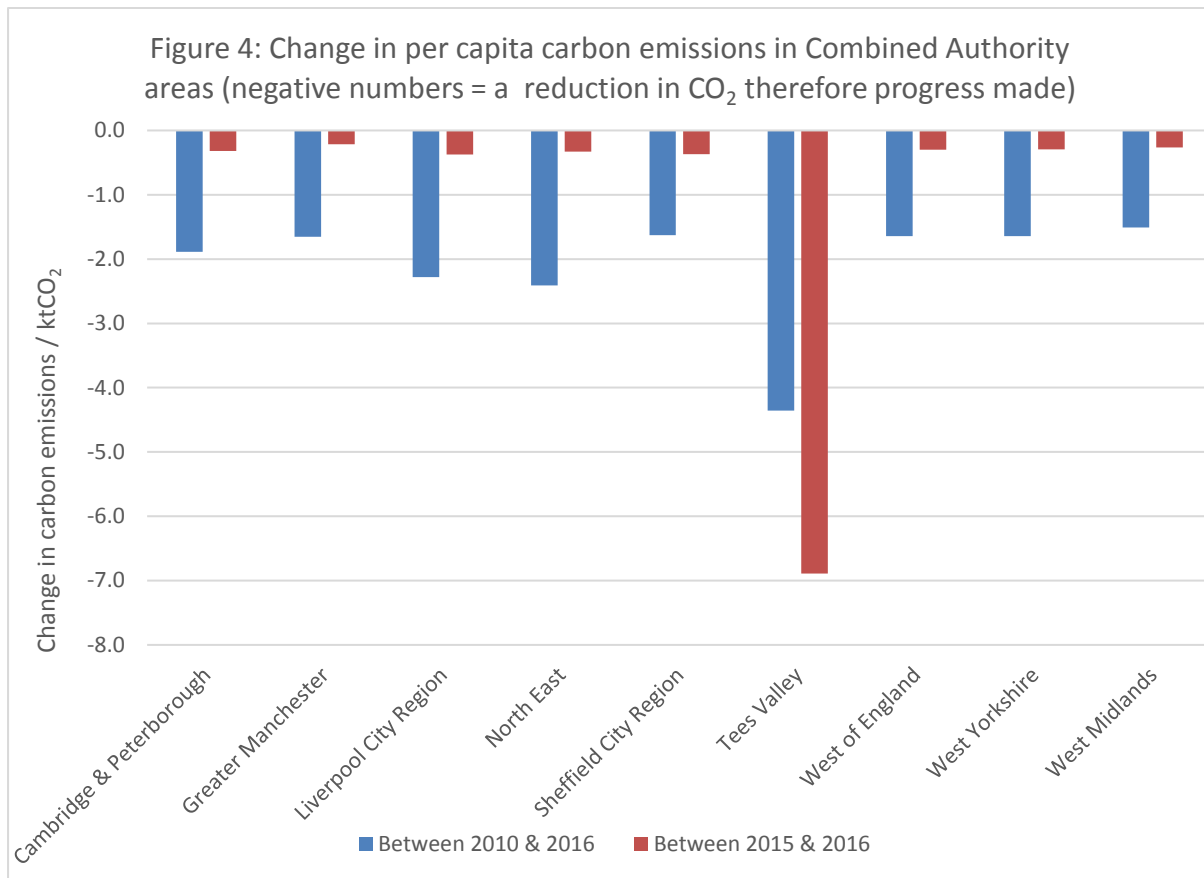
CA Carbon Emissions League Tables

Performance in most recent available year

Rank (Chg.)	CA	ktCO₂ (2016)
1 (-)	West of England	4,167
2 (-)	Cambridge & Peterborough	5,634
3 (↑1)	Liverpool City Region	7,223
4 (↑2)	Tees Valley	7,275
5 (↓2)	North East	8,195
6 (↓1)	Sheffield City Region	10,998
7 (-)	Greater Manchester	12,501
8 (-)	West Yorkshire	14,644
9 (-)	West Midlands	21,043

Progress between baseline and latest available year

Rank (Chg.)	CA	ktCO₂ % (2010-2016)
1 (-)	North East	-37.0
2 (↑7)	Tees Valley	-29.0
3 (↓1)	Liverpool City Region	-27.3
4 (↓1)	Greater Manchester	-24.2
5 (↓1)	West of England	-21.6
6 (-)	West Yorkshire	-20.4
7 (↓2)	West Midlands	-20.1
8 (-)	Cambridge & Peterborough	-17.7
9 (↓2)	Sheffield City Region	-17.1

CA Per Capita Carbon Emissions League Tables

	Performance in most recent available year			Progress between baseline and latest available year	

Rank (Chg.)	CA	tCO$_2$ (2016)
1 (-)	North East	4.2
2 (-)	Greater Manchester	4.6
3 (-)	West of England	4.7
4 (-)	West Midlands	5.1
5 (-)	Liverpool City Region	5.2
6 (-)	West Yorkshire	6.0
7 (-)	Sheffield City Region	6.6
8 (-)	Cambridge & Peterborough	6.8
9 (-)	Tees Valley	10.2

Rank (Chg.)	CA	tCO$_2$ % (2010-2016)
1 (-)	North East	-36.7
2 (-)	Liverpool City Region	-30.6
3 (↑6)	Tees Valley	-29.9
4 (↓1)	Greater Manchester	-26.5
5 (↓1)	West of England	-26.0
6 (-)	West Midlands	-22.9
7 (↓2)	Cambridge & Peterborough	-21.7
8 (↓1)	West Yorkshire	-21.6
9 (↓1)	Sheffield City Region	-19.8

2.2 Environment: Air quality

How can and why should the WMCA address the issue of poor air quality?
Air pollution is an increasing problem in the UK and is a leading or key contributory cause of health problems such as respiratory conditions and heart disease. Reducing emissions from transport and industry can have far-reaching effects and make the area a more pleasant place to live and invest.

Influencing factors: Due to its size, dense urbanisation and the concentrated networks of motorways crossing through the region, the WMCA experiences many days of poor air quality each year. Improvements are on the horizon due to the recently implemented national Clean Air Strategy[8] and the forthcoming Birmingham Clean Air Zone.[9] These, along with projects that can be directly influenced by the WMCA around improving transport emissions and good practice coordination within the forthcoming WMCA Low Emissions Strategy can all help to clean up the air in years to come.

Target: The WMCA has committed to reducing the number of days the area breaches air quality standards to zero days by 2030.

Current progress: The West Midlands breached air quality standards on 46 days in 2017, the third highest CA, and breached standards ten days more than the average across all CAs. This is likely due to the dry summer of 2018 where the associated high pressure system led to a static air mass, leading to pollutants remaining in the local area for longer and drier ground leading to more dust to begin with.

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[8] https://www.gov.uk/government/publications/clean-air-strategy-2019
[9] https://www.birmingham.gov.uk/info/20076/pollution/1763/a_clean_air_zone_for_birmingham

> **Recommendations:** Use learning from the recently implemented London Low Emission Zone and the forthcoming Birmingham Clean Air Zone to enable other parts of the WMCA region to reduce their emissions on a par.

- When analysing how many days each combined authority area has breached good air quality standards (measuring a '4' or higher on the Defra Air Quality Index), the West Midlands area breached standards ten days more than the average across all nine combined authority areas in 2018; 46 as opposed to the average of 36.
- The West Midlands area has breached standards on a number of days above the average in every year since 2010, ranging from five days more (2010, 2014 and 2017) to 23 days more (2013) (figure 5).
- The West Midlands breached air quality standards on 21 more days in 2018 compared to 2017; this is an increase of five days higher than the average. However, it should be noted that all CAs breached standards on a greater number of days in 2018 compared to most years, largely attributing to the summer drought.
- It should also be noted that the geography in which the Defra data are presented does not make a comparison between different CA areas particularly useful (see annex).

Figure 5: No. days air quality levels have breached EU standards in West Midlands versus average of all nine combined authorities
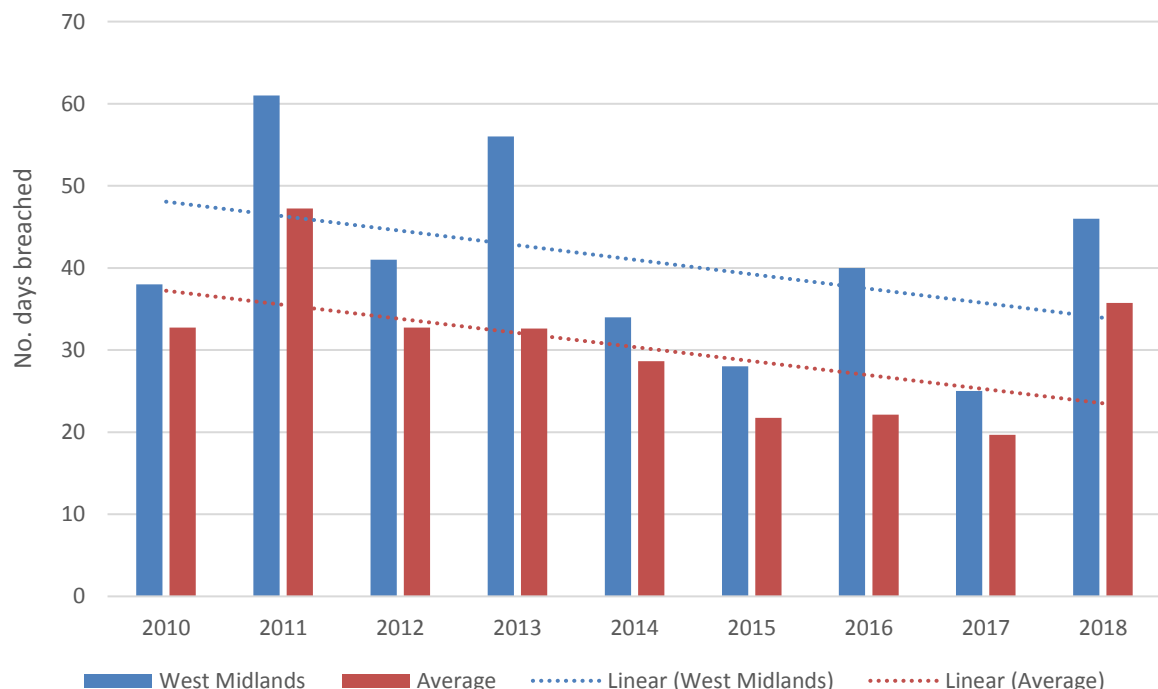
Figure 6: Change in the number of times CA areas have exceeded a '4' of the Defra Air Quality Index
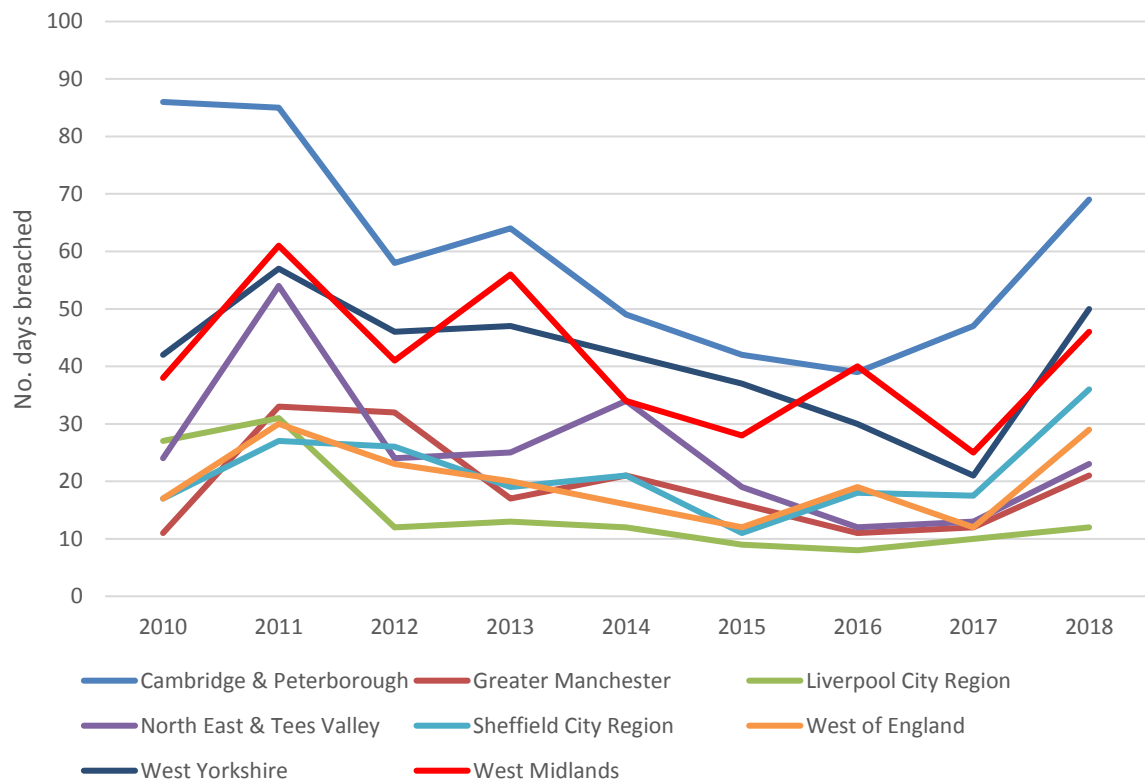
CA Air Quality League Tables

Performance in most recent available year

Rank (Chg.)	CA	No. breached days (2018)
1 (-)	Liverpool City Region	12
2 (-)	Greater Manchester	21
3 (↑1)	North East & Tees Valley	23
4 (↓2)	West of England	29
5 (-)	Sheffield City Region	36
6 (↑1)	West Midlands	46
7 (↓1)	West Yorkshire	50
8 (-)	Cambridge & Peterborough	69

Progress between baseline and latest available year

Rank (Chg.)	CA	No. breached days (2010-2018)
1 (-)	Cambridge & Peterborough	-17
2 (↑1)	Liverpool City Region	-15
3 (↑2)	North East & Tees Valley	-1
4= (↓2)	West Yorkshire	+8
4= (↓1)	West Midlands	+8
6 (↑1)	Greater Manchester	+10
7 (↑1)	West of England	+12
8 (↓1)	Sheffield City Region	+19

Note – only eight CAs ranked due to use of same data for North East and Tees Valley CAs (see annex).

2.3 Environment: Renewable electricity generation

How can and why should the WMCA make the transition to clean energy sources?
Transitioning from fossil fuels to renewable energy sources can have a positive impact on tackling climate change by reducing carbon emissions, improving health by improving air quality and on the economy, by attracting low carbon investment into the region. Smaller-scale technologies implemented on a large-scale basis could have the biggest impact in the region.

Influencing factors: The main restriction to large scale rollout of renewable energy in the WMCA is a lack of a coastline, meaning that offshore wind is not an option. Our urbanisation also makes it more challenging to implement onshore wind and large scale solar farms, for example. However, there is huge potential for community scale renewable energy programmes and domestic and commercial properties to be built or retrofitted with renewable energy technologies.

Target: The WMCA has not set a target to date but could learn from Sheffield City Region, the nearest in geographical type to the West Midlands in this respect, which generated nearly three times more energy from renewables in 2017 than the WMCA area.

Current progress: The West Midlands has generated much less electricity from renewables than the CA average, but saw a 14% increase in renewable generation between 2016 and 2017, on a par with the CA average.

Local good practice: Sandwell has increased its renewable energy generation by over 800% since 2014. Learning should be sought from here to determine what could be replicated in other districts, especially primarily urban ones.

Local support required: Four local authorities, Bromsgrove, Rugby, Tamworth and Walsall, have seen generation from renewables decrease since 2014. Coventry also generates considerably little of its energy from renewables relative to its geographically similar authorities such as Birmingham and Sandwell.

Recommendations: The Energy Capital[10] initiative can be the driver to ensuring that the region's future energy needs are met by renewables and can enable good practice to be shared between authorities such as Sandwell and Coventry.

- The comparison between CAs varies considerably depending on whether one includes plant biomass energy generated from the Drax power plant in Selby, West Yorkshire CA (see annex).
- The amount of renewable electricity generated (MWh) in each CA also varies significantly based on a number of geographical and practical factors. The comparably low figure in the West

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[10] https://www.energycapital.org.uk/

Midlands CA is understandable due to the area's lack of coastline for offshore wind, or space for large scale renewable projects (such as onshore wind).

- Overall the West Midlands generated 52,959 MWh of electricity from renewable sources in 2017 (figure 8); this is a 21,604 MWh (68.9%) increase since 2014 (figure 7).
- The West Midlands matched the CA average percentage increase in renewable electricity generated between 2016 and 2017, at 13.5%.
- For comparison, we analysed the amount of electricity generated from solar PV per household. The West Midlands is fourth out of nine CA's on this scale in 2017, generating 362 kWh electricity from PV per household.
- Overall, the amount generated by solar PV has increased by 307% in the WMCA since 2014 (figure 9). This is the second highest increase behind Sheffield City Region, suggesting in both cases that these CA's recognise the need to utilise PV more due to the lack of a coastline.
- Overall, in 2017 the West Midlands generated a high proportion of its renewable electricity from landfill and sewage gas, more so in proportion than in other parts of the country. This again shows it is using alternative means of renewable electricity generation when other sources, such as offshore wind, are unavailable.

Figure 7: Change in average total renewable energy generation*
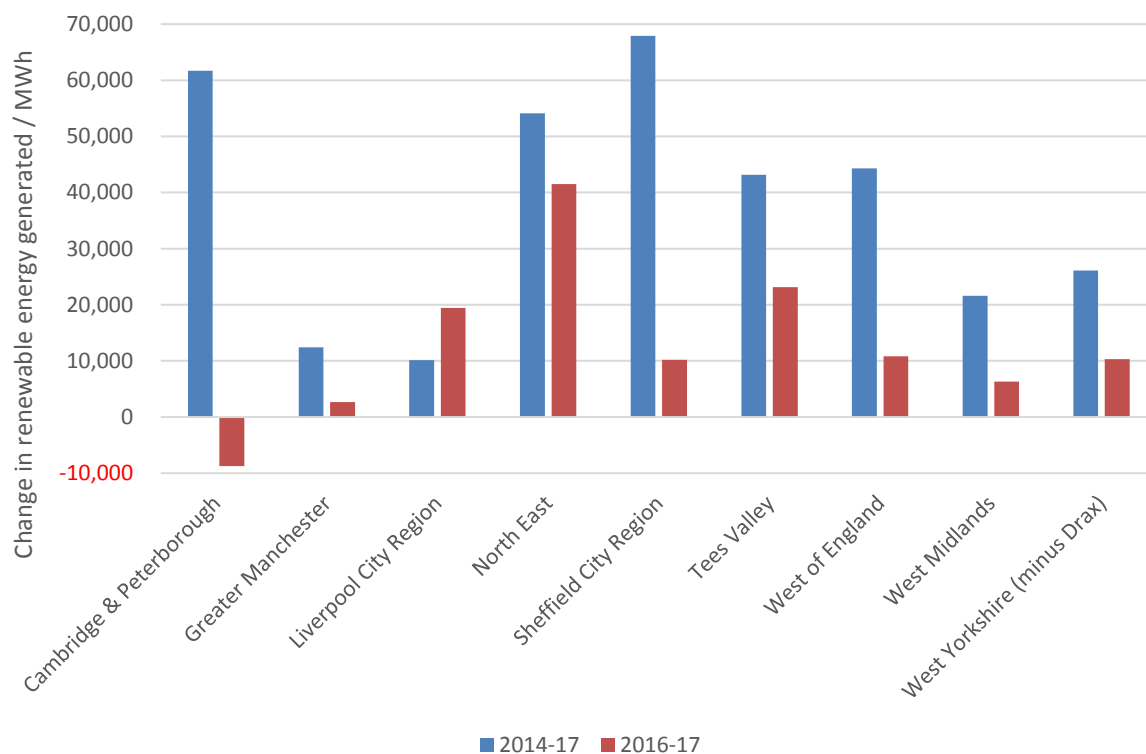
Figure 8: Change in average total renewable energy generation in West Midlands CA compared to CA average*
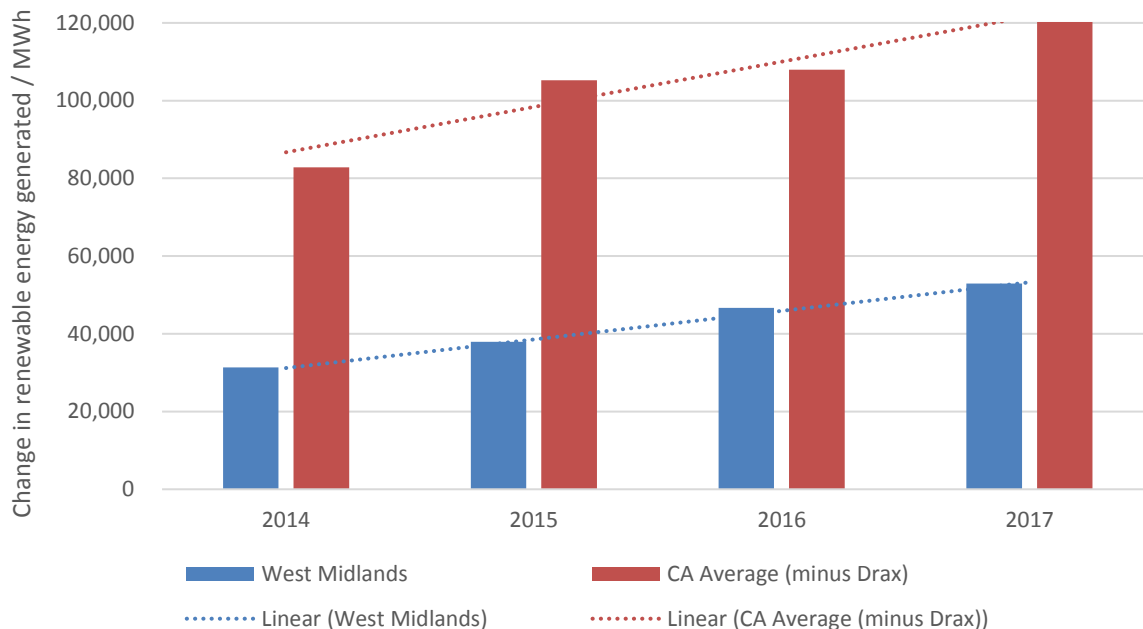
* Graphs above do **not** include data reflecting Drax plant in Selby, West Yorks CA

Figure 9: Change in average renewable energy generated by photovoltaics in West Midlands CA compared to CA average

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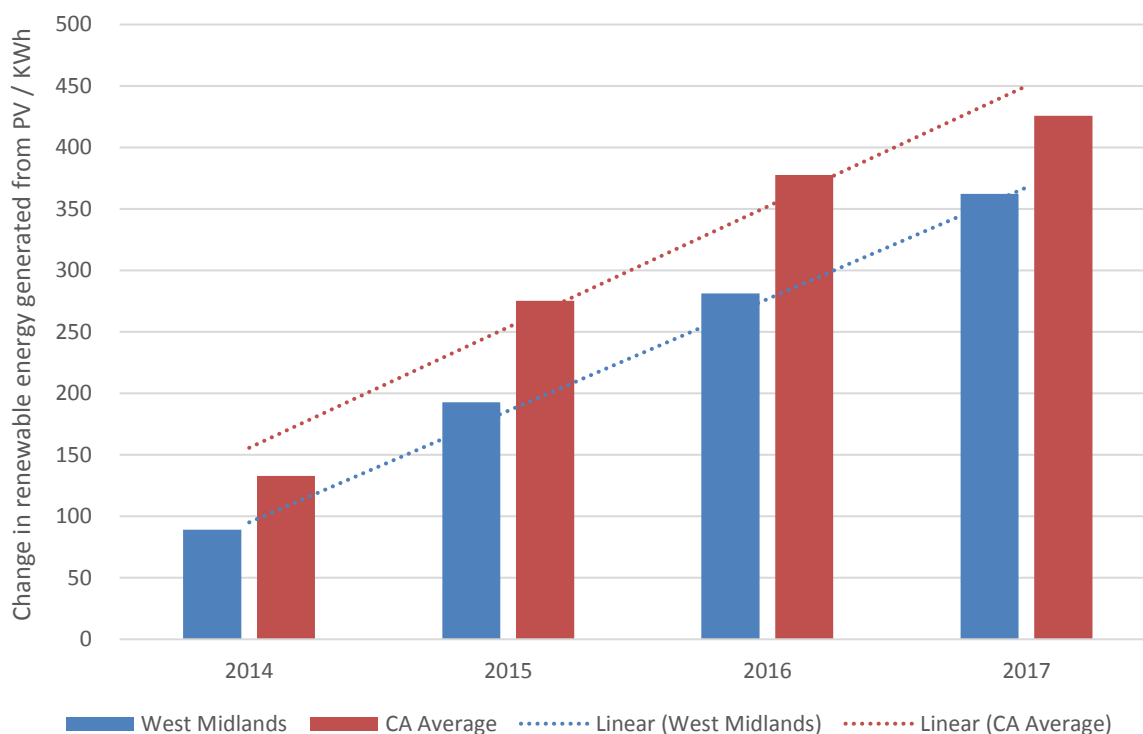
CA Renewable Electricity Generation League Tables – not including Drax

Performance in most recent available year

Rank (Chg.)	CA	MWh (2017)
1 (-)	Cambridge & Peterborough	221,852
2 (-)	North East	213,398
3 (-)	Sheffield City Region	143,020
4 (-)	Tees Valley	133,334
5 (-)	West of England	107,373
6 (-)	Liverpool City Region	95,658
7 (-)	West Yorkshire	79,030
8 (-)	West Midlands	52,959
9 (-)	Greater Manchester	40,469

Progress between baseline and latest available year

Rank (Chg.)	CA	MWh % (2014-2017)
1 (-)	Sheffield City Region	+90.5
2 (-)	West of England	+70.2
3 (↑1)	West Midlands	+68.9
4 (↑2)	West Yorkshire	+49.3
5 (↑2)	Tees Valley	+47.9
6 (↓1)	Greater Manchester	+44.4
7 (↓4)	Cambridge & Peterborough	+38.5
8 (-)	North East	+34.0
9 (-)	Liverpool City Region	+11.8

CA Renewable Electricity Generation League Tables – including Drax

Performance in most recent available year

Rank (Chg.)	CA	MWh (2017)
1 (-)	West Yorkshire	1,087,987
2 (-)	Cambridge & Peterborough	221,852
3 (-)	North East	213,398
4 (-)	Sheffield City Region	143,020
5 (-)	Tees Valley	133,334
6 (-)	West of England	107,373
7 (-)	Liverpool City Region	95,658
8 (-)	West Midlands	52,959
9 (-)	Greater Manchester	40,469

Progress between baseline and latest available year

Rank (Chg.)	CA	MWh % (2014-2017)
1 (-)	Sheffield City Region	+90.5
2 (-)	West of England	+70.2
3 (↑1)	West Midlands	+68.9
4 (↑2)	Tees Valley	+47.9
5 (-)	Greater Manchester	+44.4
6 (↓3)	Cambridge & Peterborough	+38.5
7 (-)	North East	+34.0
8 (-)	West Yorkshire	+16.8
9 (-)	Liverpool City Region	+11.8

2.4 Environment: Recycling

How can and why should the WMCA contribute to fighting the plastics and litter crisis?
It has been strongly highlighted in recent high profile documentaries how we have reached a crisis point with regards to waste. The WMCA can work with local authorities to improve recycling rates in the region, leading to the area being a more attractive place to, live, visit, work and invest. Also, improved resource use or 'the circular economy' can help drive productivity gains in business.

Influencing factors: The new national Resources and Waste Strategy[11] should help to improve the ability of organisations and individuals to recycle their waste and minimise its use in the first place. Local authorities have been stifled of resources to deal with this problem and an easing of pressures on them will significantly contribute.

Target: The WMCA has not set a target to date but can learn from West of England CA which has recycled a greater quantity of its non-household (70%) and its household (50%) waste than any other CA (36% and 10% greater respectively than in the WMCA).

Current progress: The West Midlands recycles slightly less of its non-household waste than the CA average although there was a small increase in recycling rates between 2016 and 2017. West Midland household waste recycling rates have generally declined over time and are lower than the CA average.

Local good practice: North Warwickshire and Lichfield local authorities perform well in terms of the amount of both non- and household waste that they recycle.

Local support required: Birmingham only recycles 21% of its household waste, one of the poorest performers in the country. The county councils of Warwickshire and Staffordshire have also seen significant reductions in the amount of non-household waste they recycle in recent years.

Recommendations: Local authority recycling is one of the most basic starting points to ensuring the WMCA area is doing all it can to minimise waste going to landfill. It has the potential to bring together LAs across the region to implement the ambitions of the Resources and Waste Strategy and reduce the disparity in local authority recycling rates by increasing them all overall. The business opportunities around the circular economy should also be progressed as part of the Local Industrial Strategy implementation

Non-household waste

- As the annex of this report will convey, the non-household waste data needs to be treated with caution due to a few uncertainties around calculations.
- However, overall figures show that the West Midlands recycled 34.8% of its non-household waste in 2017, compared to the CA average of 36.3% (figure 11).

[11] https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england

- Both West Midlands and the overall CA average recycling rates have decrease since 2014 (36.4% non-household waste recycled in West Midlands and 37.1% average across all CAs) (figure 11).
- Overall the West Midlands is fifth out of nine CAs for the percentage of non-household waste it recycled in 2017, consistent with the previous year (figure 10).

Figure 10: Change in % of **non**-household waste recycled in CA areas
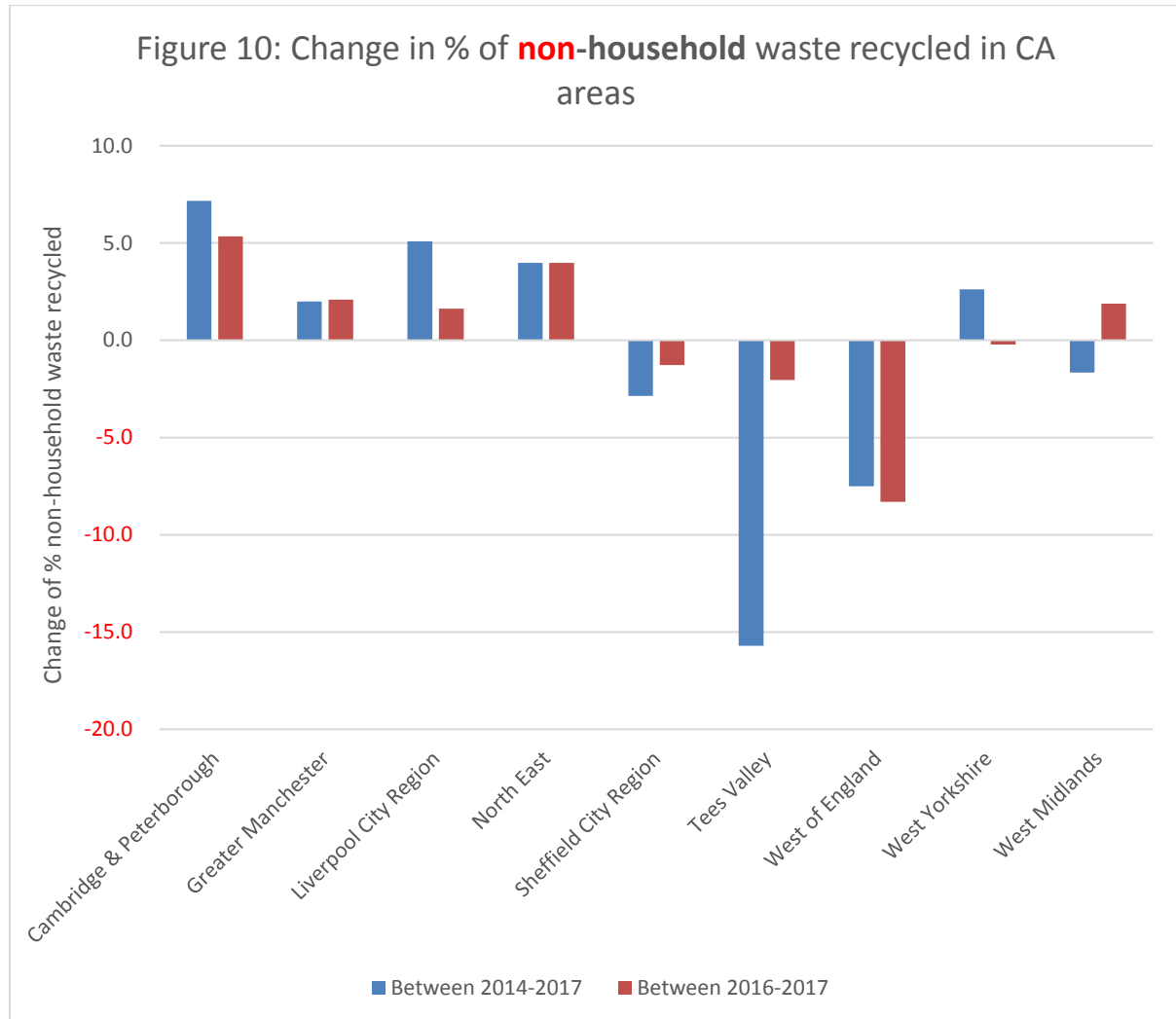
Figure 11: Average % **non**-**household** waste recycled in West Midlands CA compared to the average for all nine combined authorities
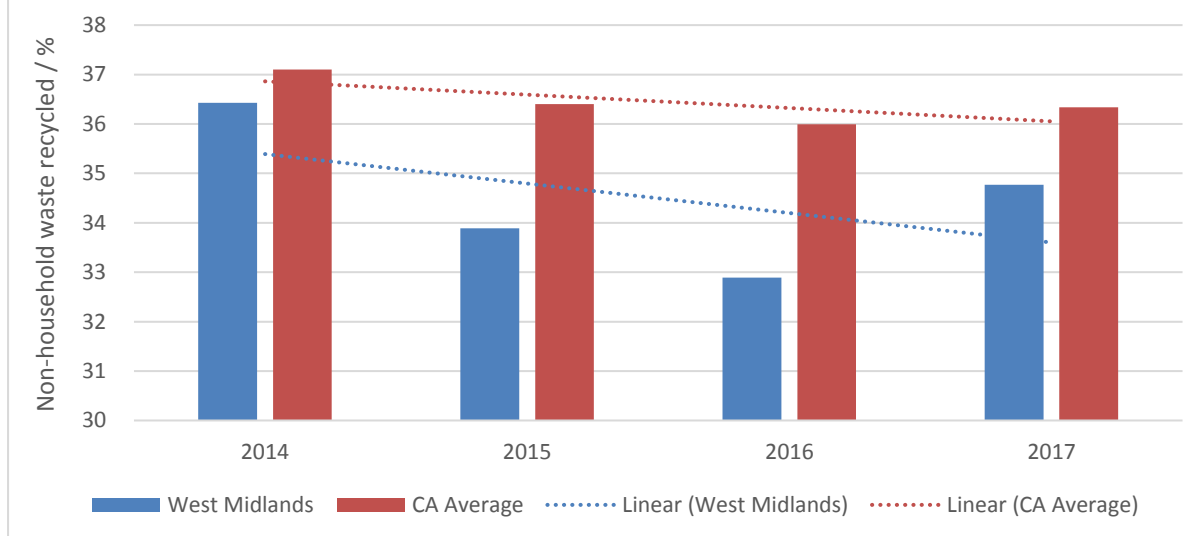
CA Non-Household Waste Recycled League Tables

Performance in most recent available year

Rank (Chg.)	CA	% (2017)
1 (-)	West of England	70.6
2 (-)	North East	47.4
3 (↑1)	Liverpool City Region	39.4
4 (↓1)	Tees Valley	37.6
5 (-)	West Midlands	34.8
6 (-)	West Yorkshire	30.2
7 (-)	Cambridge & Peterborough	28.9
8 (-)	Sheffield City Region	21.2
9 (-)	Greater Manchester	16.8

Progress between baseline and latest available year

Rank (Chg.)	CA	% (2014-2017)
1 (↑2)	Cambridge & Peterborough	+7.2
2 (↓1)	Liverpool City Region	+5.1
3 (↑2)	North East	+4.0
4 (↓2)	West Yorkshire	+2.6
5 (↑1)	Greater Manchester	+2.0
6 (↑2)	West Midlands	-1.7
7 (-)	Sheffield City Region	-2.9
8 (↓4)	West of England	-7.5
9 (-)	Tees Valley	-15.7

Household waste

- Household recycling rates across the West Midlands CA are at their lowest since 2010, registering at 40.2% in 2017, compared to 2012 where rates peaked at 43.9%.
- The West Midlands (41.5%) was above the overall CA average (38.8%) of household waste recycled in 2010, but is now below (40.2% compared to 41.8%) (figure 13).
- The West Midlands is one of only three CA areas to have a lower recycling rate in 2017 compared to 2010 (the other two are North East and Tees Valley) (figure 12).
- The best performer is West of England, which recycles over half (50.4%) of its household waste. The biggest improvement has been seen in Manchester (15% increase since 2010). The West Midlands falls well below these (figure 12).
- Overall, in 2017 the WMCA was ranked sixth out of nine CAs for recycling its household waste.

Figure 12: Change in % of **household** waste recycled in CA areas
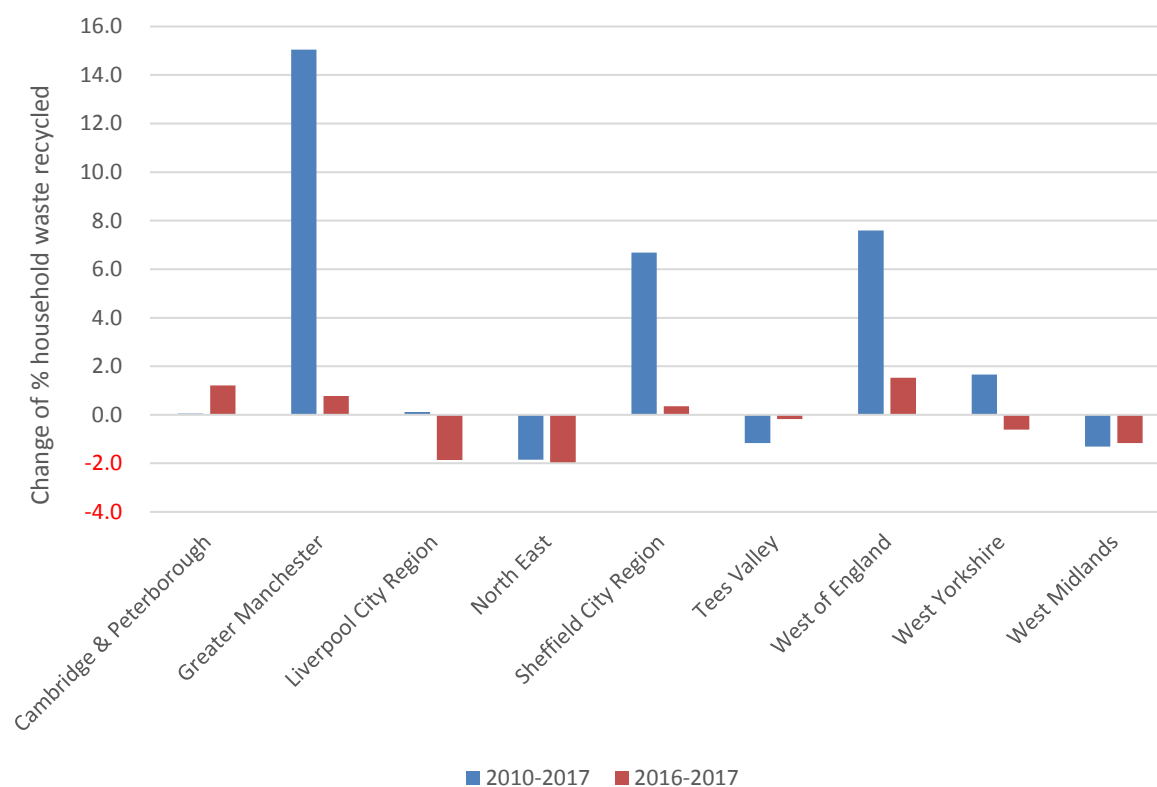
Figure 13: Average % **household** waste recycled in West Midlands CA compared to the average for all nine combined authorities

CA Household Waste Recycled League Tables

	Performance in most recent available year			Progress between baseline and latest available year	
Rank (Chg.)	**CA**	**% (2017)**	**Rank** (Chg.)	**CA**	**% (2010-2017)**
1 (-)	West of England	50.4	**1** (-)	Greater Manchester	+15.0
2 (-)	Cambridge & Peterborough	49.4	**2** (↑1)	West of England	+7.6
3 (-)	Greater Manchester	48.8	**3** (↓1)	Sheffield City Region	+6.7
4 (-)	Sheffield City Region	43.4	**4** (-)	West Yorkshire	+1.7
5 (-)	West Yorkshire	40.9	**5=** (-)	Liverpool City Region	+0.1
6 (-)	West Midlands	40.2	**5=** (↑4)	Cambridge & Peterborough	+0.1
7 (-)	Liverpool City Region	35.0	**7** (↑1)	Tees Valley	-1.2
8 (↑1)	Tees Valley	34.3	**8** (↓1)	West Midlands	-1.3
9 (↓1)	North East	33.8	**9** (↓3)	North East	-1.8

2.5 Environment: Sites in positive conservation management

How can and why should the WMCA conserve nature?
Biodiversity is in decline and it is increasingly well known that the benefits of improving ecologically rich areas have far reaching benefits to the local economic (e.g. through higher tourism levels) environmental (e.g. flood alleviation) and social (e.g. more pleasant, safer spaces to walk and cycle) priorities. The WMCA has the power to integrate nature into all its decision making.

Influencing factors: The Government's 25 Year Environment Plan[12] sets out the importance of this issue and how authorities can contribute to meeting the Plan's ambitions. The largely urban nature of the WMCA provides an opportunity to put nature at the heart of town and city planning to reap the various benefits that green infrastructure can bring.

Target: The WMCA has not set a target to date but should aim for 70% or more of its designated sites for substantive nature conservation importance to be in positive conservation management; this would currently represent best in class and is 30 percentage points better than in the WMCA.

Current progress: The percentage of sites in positive conservation management has increased in the West Midlands since 2010, but remains low compared to the average.

Local good practice: Currently, 61% of Birmingham's ecologically important sites are in positive conservation management, followed closely by Coventry.

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[12] https://www.gov.uk/government/publications/25-year-environment-plan

![sustainability west midlands logo]

- The gaps in the data must be considered when analysing this metric (see annex); nevertheless, fairly clear patterns of sites in positive conservation management (i.e. sites whose nature conservation interest (geology or wildlife) are preserved) can still be determined.
- The percentage of sites in positive management has increased by an average of 4.2% in the West Midlands since 2010 to 2017. However, this rate of increase is less than the CA average (figure 15) and much lower than the CA with the highest rate of change; Tees Valley, with a 15.8% increase (figure 14).
- The average percentage of sites in positive management in 2017 was 40.2%; this is the second lowest out of all CA areas; only Sheffield CR CA is lower (33.2%) (figure 14).
- Overall, the gap between the West Midlands percentage of sites in positive conservation management and the overall CA average has widened over time, although the overall CA average has come down in 2017 to 47.2% from 48.2%, meaning the gap in 2017 has narrowed slightly (figure 15).

Figure 14: Change in % of sites in positive conservation management in Combined Authority areas
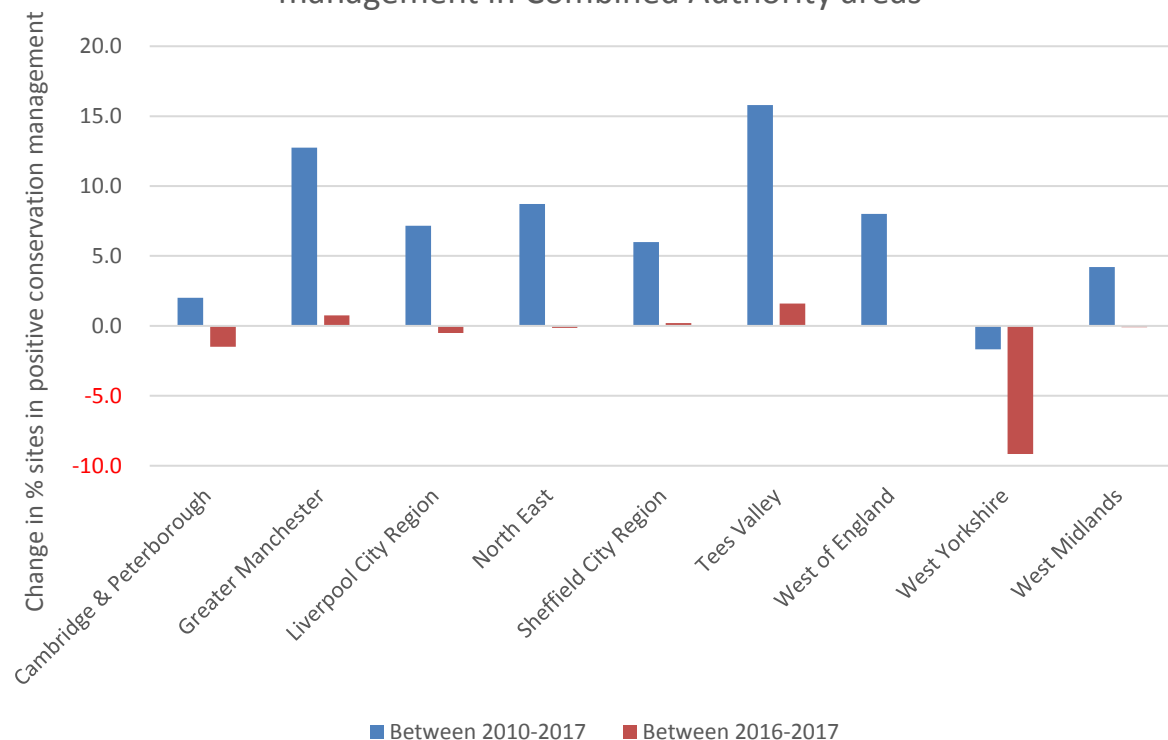
Figure 15: % sites in positive conservation management in West Midlands CA compared to the average for all nine combined authorities
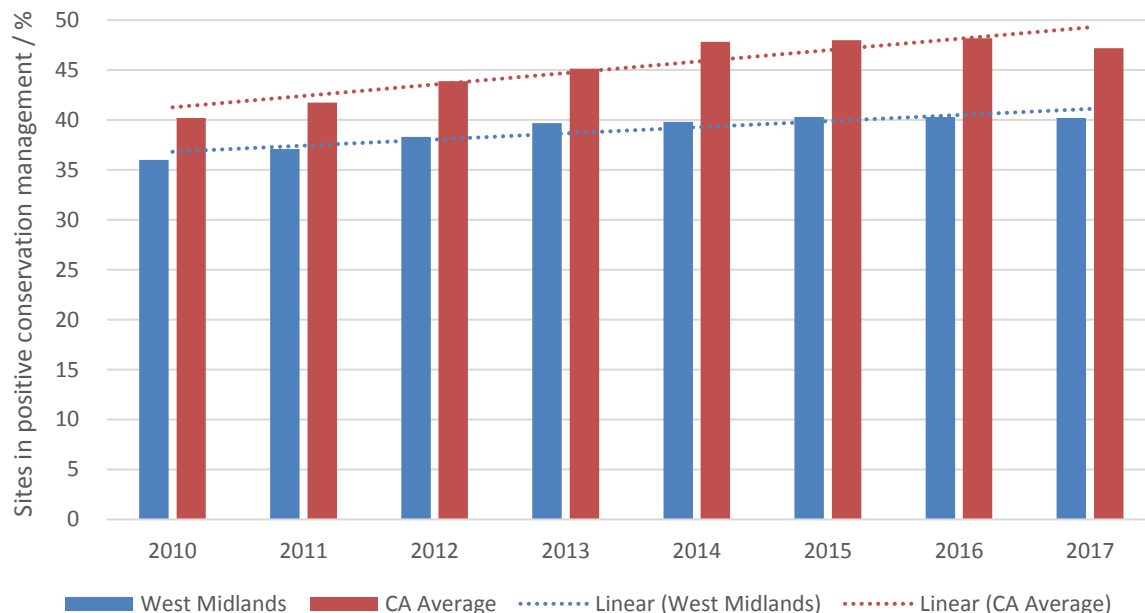
CA Sites in Positive Conservation Management League Tables

Performance in most recent available year

Rank (Chg.)	CA	% (2017)
1 (-)	Cambridge & Peterborough	67.5
2 (↑2)	Tees Valley	51.8
3 (-)	West of England	50.7
4 (↑1)	North East	48.1
5 (↓3)	West Yorkshire	45.8
6 (-)	Greater Manchester	45.3
7 (-)	Liverpool City Region	42.2
8 (-)	West Midlands	40.2
9 (-)	Sheffield City Region	33.2

Progress between baseline and latest available year

Rank (Chg.)	CA	% (2010-2017)
1 (-)	Tees Valley	+15.8
2 (-)	Greater Manchester	+12.8
3 (-)	North East	+8.7
4 (-)	West of England	+8.0
5 (-)	Liverpool City Region	+7.2
6 (↑1)	Sheffield City Region	+6.0
7 (↑1)	West Midlands	+4.2
8 (↑1)	Cambridge & Peterborough	+2.0
9 (↓3)	West Yorkshire	-1.7

2.6 Environment: Water quality and flood risk metrics (NEW)

How can and why should the WMCA improve water quality?
Along with supporting the reverse in decline of biodiversity, improving water quality can attract more visitors to the area by making key tourist locations more attractive. It can also help to protect and improve the usability of our water resources which will become even more important due to future climate changes.

Influencing factors: Cooperation between authorities outside and inside the WMCA boundaries are vital, given that most water courses cut through many different localities. This is not easy, but the Environment Agency (EA) can influence this through being the leading national agency on this agenda and their position on the WMCA Environment Advisory and Delivery Group and WMCA Housing and Land Board.

Target: The WMCA has not set a target to date but should aim for the majority of its water courses to achieve a 'good' or higher status.

Current progress: Most water courses within the WMCA recorded a quality status of between moderate and good, but there is significant variation in different areas.

Recommendations: The first step is to undertake a more detailed analysis of water quality in regional catchments to determine areas that need specific improvements, then link this to the planned WMCA Natural Capital strategy.

How can and why should the WMCA alleviate flooding?
Flooding can cause huge economic impacts if it is not mitigated against. This is particularly relevant with climate change in mind, given the likely increase to pluvial (surface water) flooding which is exacerbated in urban areas by poor run-off and a greater value of assets. The WMCA, with the EA, should undertake a detailed assessment of flood risk in the region as a first step.

Influencing factors: Flooding, especially that of a pluvial nature, is very unpredictable. EA is the lead authority in terms of alleviating and supporting businesses and communities with the impacts of flooding and their expertise can be sought to determine where to implement resource.

Target: The WMCA has not set a target to date but should aim to reduce the number of properties currently at risk of flooding.

Current progress: There are 109,000 properties at risk of flooding in the WMCA conurbation authorities and this does not factor in increases due to climate change.

Recommendations: The first step is to undertake a more detailed analysis of flood risk across the region to determine areas that need specific improvements.

For this report, we have been engaging with the Environment Agency to obtain data reflecting water quality and flood risk across the different combined authority areas. Unfortunately, the data were not attainable within the required timescales of this piece of work, however, we have analysed some data reflecting water quality and flood risk solely for the WMCA which can be found in section three of this report. As a minimum, this provides an indication of the scale of the challenge in the WMCA. It is hoped that, upon repeating this exercise next year, data for all CAs can be obtained so that similar analyses can be carried out for water quality and flood risk as for the other metrics analysed in this report.

2.7 Social: Health inequality

How can and why should the WMCA improve health inequality?
Health inequality is a measure of the social impacts of wealth and quality of the environment on the region as indicated by the life expectancy between the richest and poorest areas. To have a low health inequality means to have an evenly spread economy and skills base, as well as more equal opportunities for all and access to a good quality local environment. These factors should be more integrated into the rest of the WMCA's activities to deliver its overall inclusive growth priorities.

Influencing factors: Pockets of deprivation and variations in demographics caused by a combination of reasons stretching back in time largely influence this metric. The WMCA can work with local authorities and Public Health England to ensure such areas are targeted with relevant interventions. Positive interventions take a while to be picked up within the monitoring.

Target: Reduction in average male health inequality gap by 5.3 years and female gap by 3.9 years by 2030.

Current progress: Health inequality is slightly lower in the WMCA than in other CA areas, but remains high overall and has increased between 2015 and 2016. The gap between male and female health inequality is low in the WMCA compared to other CA areas.

Local good practice: Health inequality is generally lower in the fringe, more rural districts of the WMCA such as North Warwickshire and Bromsgrove.

Local support required: Areas where wealth is unevenly distributed have the highest health inequality gap; Solihull is the worst example with a 13 year gap for men and 11 year gap for women, with localities such as Walsall and Coventry following close behind.

Recommendations: Use the data to target interventions in areas with a greater health inequality gap by encouraging improvements in contributory factors to lower life expectancies, such as access to work, diet, exercise levels, housing quality and access to a good local environment.

- The health inequality gap, life expectancy in the wealthiest compared to the poorest areas of a given locality, is slightly lower for both females and males in the West Midlands CA when compared to the average across all combined authorities. In 2016, the gap was 8.3 years for males and 6.8 for females, compared to the combined authority area average of 9.1 years for males and 7.4 for females (figures 16 and 17).

- Since 2010, male health inequality in the WMCA region has decreased by 0.5 years, slightly worse than the average of a 0.7 year decrease. However, female health inequality in the WMCA has increased by 0.3 years, compared to the average of a 0.1 year increase.

- It is also concerning that between 2015 and 2016, the health inequality gap for males has increased by 0.5 years and by 0.2 years for females. This is slightly greater than the average for both males and females. The health inequality gap for both genders has not improved in the West Midlands since 2012.

- In all combined authority areas, male health inequality is greater than female health inequality. On average, the difference in health inequality between men and women is 1.8 years in 2016, although this gap has slightly narrowed since 2010, where it stood at 2.5 years. The gap in the West Midlands CA area is smaller between male and female health inequality than in any other CA area jointly with Sheffield City Region, standing at 1.5 years in 2016. It was even narrower in 2013, at 0.6 years, and had the narrowest gap overall between 2012 and 2014.

Figure 16: Health inequality by combined authority area between 2010/11 and 2016
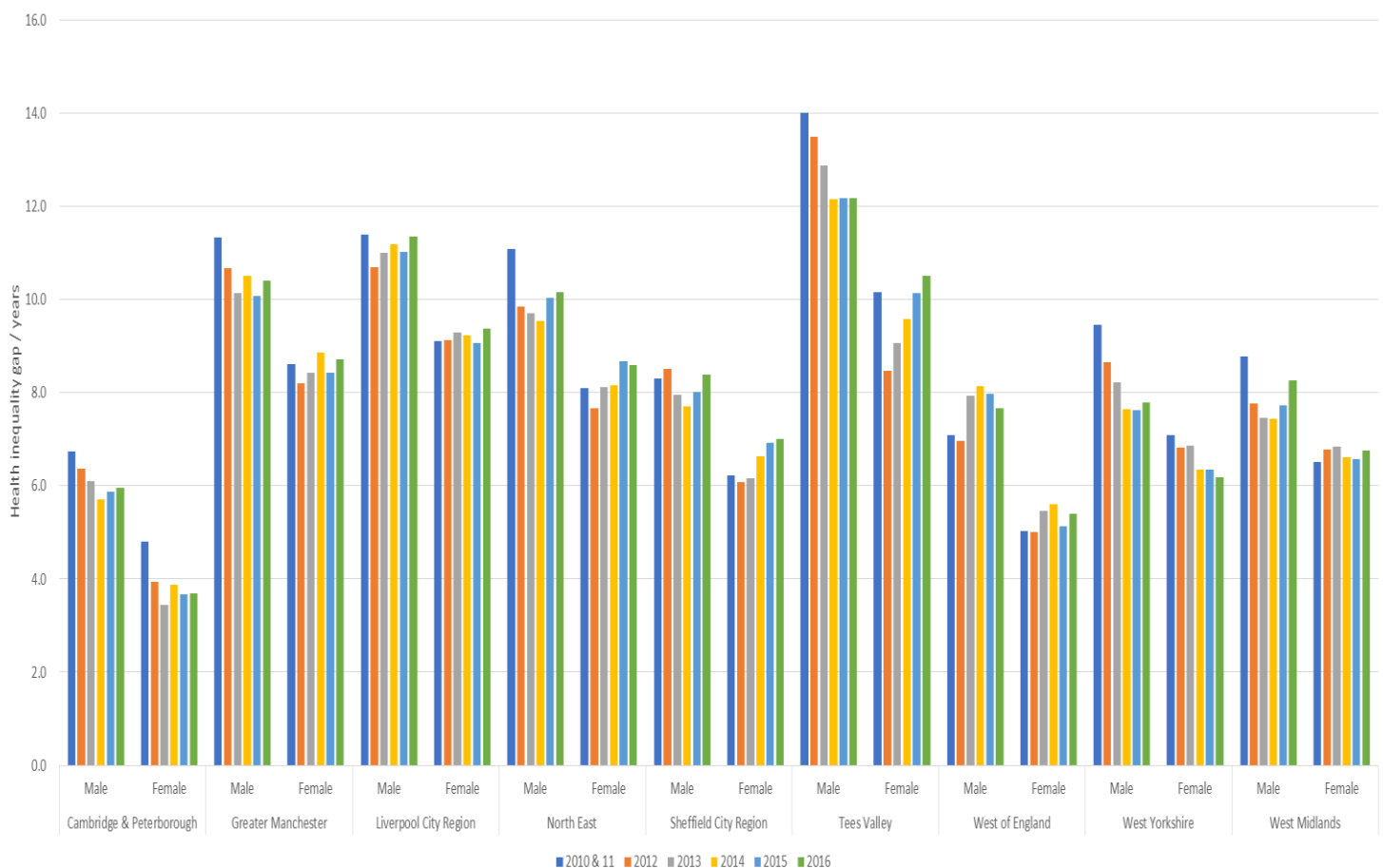
Figure 17: Change and level of health inequality in the West Midlands Combined Authority compared to the average of all nine combined authorities

CA Female Health Inequality Gap League Tables

Performance in most recent available year			Progress between baseline and latest available year		
Rank (Chg.)	**CA**	**Years (2016)**	**Rank** (Chg.)	**CA**	**Years (2010/11-2016)**
1 (-)	Cambridge & Peterborough	3.7	**1** (-)	Cambridge & Peterborough	-1.1
2 (-)	West of England	5.4	**2** (-)	West Yorkshire	-0.9
3 (-)	West Yorkshire	6.2	**3** (-)	Greater Manchester	+0.1
4 (-)	West Midlands	6.8	**4=** (-)	Liverpool City Region	+0.3
5 (-)	Sheffield City Region	7.0	**4=** (↓1)	West Midlands	+0.3
6 (↑1)	North East	8.6	**6=** (-)	Tees Valley	+0.4
7 (↓1)	Greater Manchester	8.7	**6=** (↑1)	West of England	+0.4
8 (-)	Liverpool City Region	9.4	**8** (-)	North East	+0.5
9 (-)	Tees Valley	10.5	**9** (-)	Sheffield City Region	+0.8

CA Male Health Inequality Gap League Tables

Performance in most recent available year			Progress between baseline and latest available year		
Rank (Chg.)	CA	Years (2016)	Rank (Chg.)	CA	Years (2010/11-2016)
1 (-)	Cambridge & Peterborough	6.0	1 (-)	Tees Valley	-1.8
2 (↑3)	West of England	7.7	2 (-)	West Yorkshire	-1.7
3 (-)	West Yorkshire	7.8	3= (-)	Greater Manchester	-0.9
4 (↓1)	West Midlands	8.3	3= (↑1)	North East	-0.9
5 (↓2)	Sheffield City Region	8.4	5 (-)	Cambridge & Peterborough	-0.8
6 (-)	North East	10.2	6 (-)	West Midlands	-0.5
7 (-)	Greater Manchester	10.4	7 (-)	Liverpool City Region	0.0
8 (-)	Liverpool City Region	11.4	8 (-)	Sheffield City Region	+0.1
9 (-)	Tees Valley	12.2	9 (-)	West of England	+0.6

2.8   Social: Fraction of mortality attributable to particulate air pollution (NEW)

How can and why should the WMCA address the issue of poor air quality?
Air pollution is an increasing problem in the UK and is a leading or contributory cause of health problems such as respiratory conditions and heart disease. Reducing emissions from transport and industry can have far-reaching effects and make the area a more pleasant place to live and invest.

Influencing factors: Due to its size, dense urbanisation and the concentrated network of motorways crossing through the region, the WMCA experiences a significant number of deaths that are attributable to poor air quality each year. Improvements are on the horizon due to the recently implemented national Clean Air Strategy and the forthcoming Birmingham City Council Birmingham Clean Air Zone. These, along with projects that can be directly influenced by the WMCA around improving transport emissions, can all help to clean up the air in years to come.

Target: No target set to date that focuses specifically on reducing mortality from air pollution, but reducing the rate to 3.5% (WMCA currently 5.1%) in terms of cause of death attributable to exposure to PM2.5's would currently represent best in class compared to other CA areas.

Current progress: The percentage of people who die as a result of exposure to particulate air pollution is higher in the West Midlands than the CA average, but has slightly declined since 2010.

Local good practice: The fraction of mortality as a result of particulate air pollution is understandably lower in the fringe, more rural districts of the WMCA such as North

Warwickshire and Bromsgrove. The best progress over time in the urbanised areas has been made in the Black Country.

Local support required: 5.7% of people die as a consequence of poor air quality in Sandwell, closely followed by Birmingham.

Recommendations: Use learning from the recently implemented London Low Emission Zone and the forthcoming Birmingham Clean Air Zone to spread enable other parts of the WMCA region to reduce their emissions on a par. Educate people, especially those with pre-existing medical conditions, on how best to adapt during days when the air quality is poorer.

- The fraction of mortality attributable to particulate air pollution has decreased slightly between 2011-2017, by an average of 0.3% in WMCA, compared to CA average of 0.4% (figures 18/19).
- The average percentage of people who die as a result of exposure to particulate air pollution in 2017 in the West Midlands was 5.1%; this is the second highest out of all CA areas; only Cambridge & Peterborough CA is higher (5.3%).
- Overall just over 5% of the population have experienced mortality as a result of particulate air pollution exposure consistently each year since 2011 in the West Midlands; there has been little variation over time. Every year, the area is one of the highest in this respect, albeit variation between CAs is only in the order of ~1.5%.

Figure 18: Change in fraction of mortality attributable to particulate air pollution %
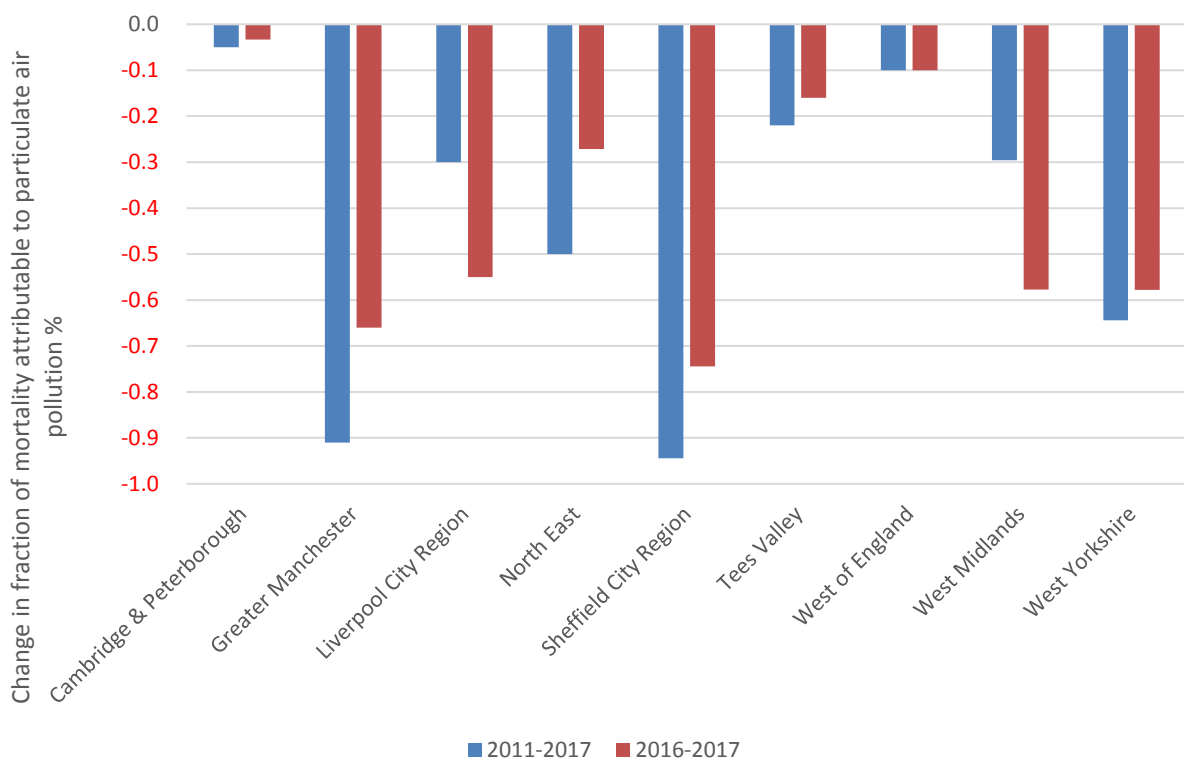
Figure 19: Change in fraction of mortality attributable to particulate air pollution %
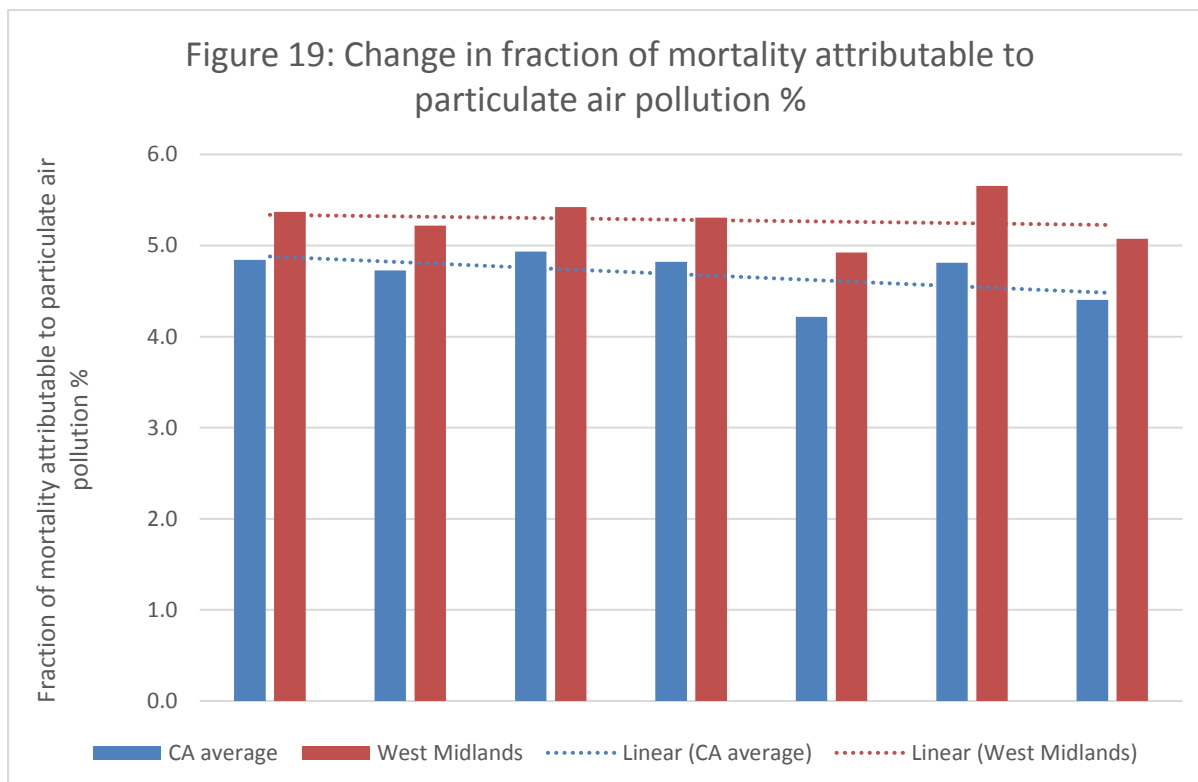
CA Fraction of Mortality Attributable to Particulate Air Pollution League Tables

Performance in most recent available year

Rank (Chg.)	CA	% (2017)
1 (-)	North East	3.6
2 (-)	Tees Valley	3.9
3 (-)	West Yorkshire	4.0
4 (-)	Sheffield City Region	4.1
5= (-)	Liverpool City Region	4.3
5= (↑1)	Greater Manchester	4.3
7 (-)	West of England	5.0
8 (↑1)	West Midlands	5.1
9 (↓1)	Cambridge & Peterborough	5.3

Progress between baseline and latest available year

Rank (Chg.)	CA	% (2010-2017)
1= (-)	Sheffield City Region	-0.9
1= (-)	Greater Manchester	-0.9
3 (↑1)	West Yorkshire	-0.6
4 (↓3)	North East	-0.5
5= (↑3)	Liverpool City Region	-0.3
5= (↑3)	West Midlands	-0.3
7 (↓3)	Tees Valley	-0.2
8= (↓2)	West of England	-0.1
8= (↓4)	Cambridge & Peterborough	-0.1

2.9 Social: Fuel poverty

How can and why should the WMCA reduce the number of people in fuel poor homes?
There is still a significant number of people in the West Midlands who have to choose between heating and eating during the winter months. Improving the housing quality of those in fuel poor homes and providing opportunities for them to work and more evenly distribute wealth will result in a greater proportion of people able to contribute to the local economy.

Influencing factors: Housing quality, wealth distribution and energy usage are primary contributors to this metric, changes to which can all be driven nationally and locally, along with whether those affected have any pre-existing health problems.

Target: No target set to date but reducing the number of households in fuel poverty to 9% would currently represent best in class compared to other CAs and require a reduction of 3.6 percentage points.

Current progress: Fuel poverty levels in the West Midlands are worse than the average across all CAs, albeit the gap has narrowed, and the number of people in fuel poverty in the WMCA has increased between 2015 and 2016.

Local good practice: Solihull is the only local authority with less than 10% of households in fuel poverty. The suburban districts are generally the best performers.

Local support required: The major conurbations have the largest number of households in fuel poverty, as high as nearly 17% in Sandwell and Birmingham.

Recommendations: Use learning from areas that have made the best improvements to the number of households in fuel poverty, such as Rugby and Bromsgrove, to determine any scalable success measures. Enable the Energy Capital initiative to tackle fuel poverty in priority areas.

- In 2016, 12.6% of households in the West Midlands are classed as being in fuel poverty. This is higher than the CA average of 12.1% (figure 21).
- Overall, the West Midlands is ranked sixth in terms of the proportion of households in fuel poverty in 2016.
- The West Midlands' performance is slightly lower when compared to 2011 (figure 20), when 13% of households were in fuel poverty, relative to the CA average which was 11.7% (figure 21). Overall, fuel poverty across most CA's has flat-lined between 2011 and 2016.
- However, the number of households in fuel poverty has increased in the West Midlands between 2014 (10.9%) and 2016 (12.6%). This is the third largest increase of all CAs.

Figure 20: Change in % of homes in fuel poverty in Combined Authority areas (negative numbers= a reduction in fuel poverty levels therefore progress made)
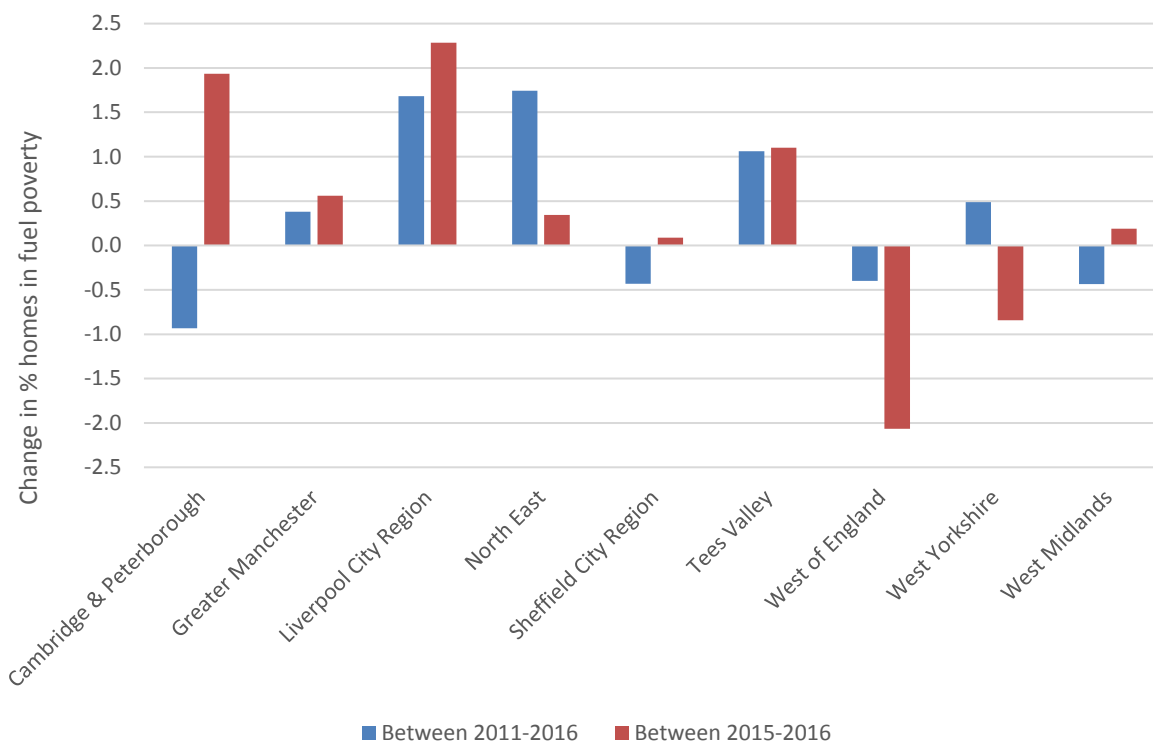
Figure 21: % homes in fuel poverty in West Midlands CA compared to the average for all nine combined authorities
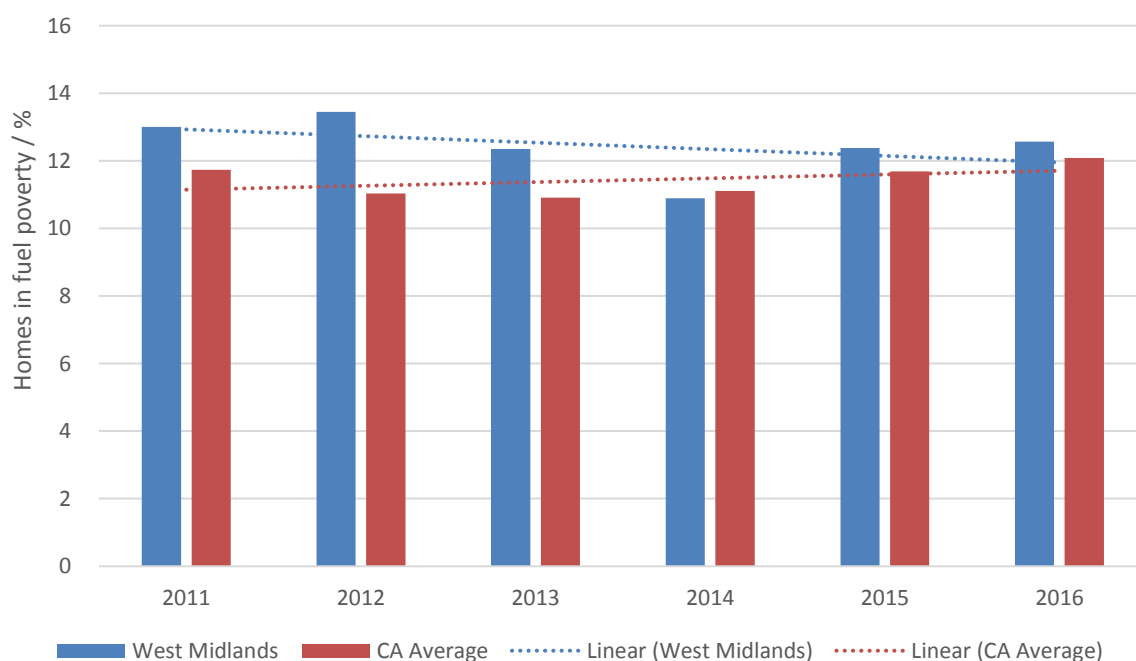
CA Households in Fuel Poverty League Tables

Performance in most recent available year

Rank (Chg.)	CA	% (2016)
1 (↑1)	West of England	9.3
2 (↓1)	Cambridge & Peterborough	9.6
3 (↑3)	West Yorkshire	11.4
4 (-)	Sheffield City Region	11.7
5 (-)	Greater Manchester	12.3
6 (↑1)	West Midlands	12.6
7 (↑1)	North East	13.4
8 (↓5)	Liverpool City Region	13.8
9 (-)	Tees Valley	14.6

Progress between baseline and latest available year

Rank (Chg.)	CA	% (2011-2016)
1 (-)	Cambridge & Peterborough	-0.9
2= (↑2)	Sheffield City Region	-0.4
2= (↑6)	West of England	-0.4
2= (-)	West Midlands	-0.4
5 (-)	Greater Manchester	+0.4
6 (↑1)	West Yorkshire	+0.5
7 (↓1)	Tees Valley	+1.1
8= (↓6)	Liverpool City Region	+1.7
8= (-)	North East	+1.7

2.10 Economic: Productivity

How can and why should the WMCA continue to improve economic productivity?
For investment to be attracted in the region, continuing to boost economic productivity is a must. There is strong potential based on recent studies to focus economic growth on areas related to sustainability, such as low carbon energy, next generation transport and sustainable construction.

Influencing factors: Key growth sectors such as the above, business clusters and proximity to key networks such as motorways and railways. The government's Industrial Strategy and new Local Industrial Strategies also contribute to local growth.

Target: Increase to £33,604 per capita by 2030.

Current progress: The West Midlands is performing well in economic productivity compared to other CA areas and also has a slightly above average performance per head.

Local good practice: Birmingham has comfortably the highest economic productivity and Solihull has the strongest economic productivity per head.

Local support required: Poorest performance on both absolute and per head economic productivity are consistently in the Black Country authorities.

Recommendations: A more even distribution of productivity will address some of the other issues outlined in this report, such as health inequality and fuel poverty, so lessons learnt from places such as Solihull should be sought for Black Country areas. All economic growth should be sustainable to ensure it is not at the detriment of the environment, which itself can bring huge benefits to the local economy. The

implementation of the new Local Industrial Strategy should ensure future growth successes are inclusive and the benefits more evenly distributed.

- Economic productivity is measured in Gross Value Added (GVA) and GVA per head for each NUTS region in the UK (see annex). This allowed for a fairly accurate portrayal of economic productivity across each CA region.
- Overall the West Midlands region performs the best on most economic growth measures. For example in 2017, GVA was significantly higher in the West Midlands than any other CA area and when compared to the average (figure 22). Its GVA was £83,894 million compared to an average of £42,537 million showing a difference of £41,357 million.
- The overall GVA in the West Midlands has increased the most of any CA, by 36% between 2010 and 2017 (figure 24). It has increased by 28% per head since 2010, also the highest on average (figure 25).
- The West Midlands is fourth out of nine when factoring in population (per head) on productivity and is slightly higher than the average (figure 23).
- The change in overall and per head GVA in the West Midlands between 2016 and 2017 was about average, increasing by 3.3% and 2.4% respectively, but less than the increase seen between 2015 and 2016.

Figure 22: Economic productivity in the West Midlands compared to the average for all nine combined authorities
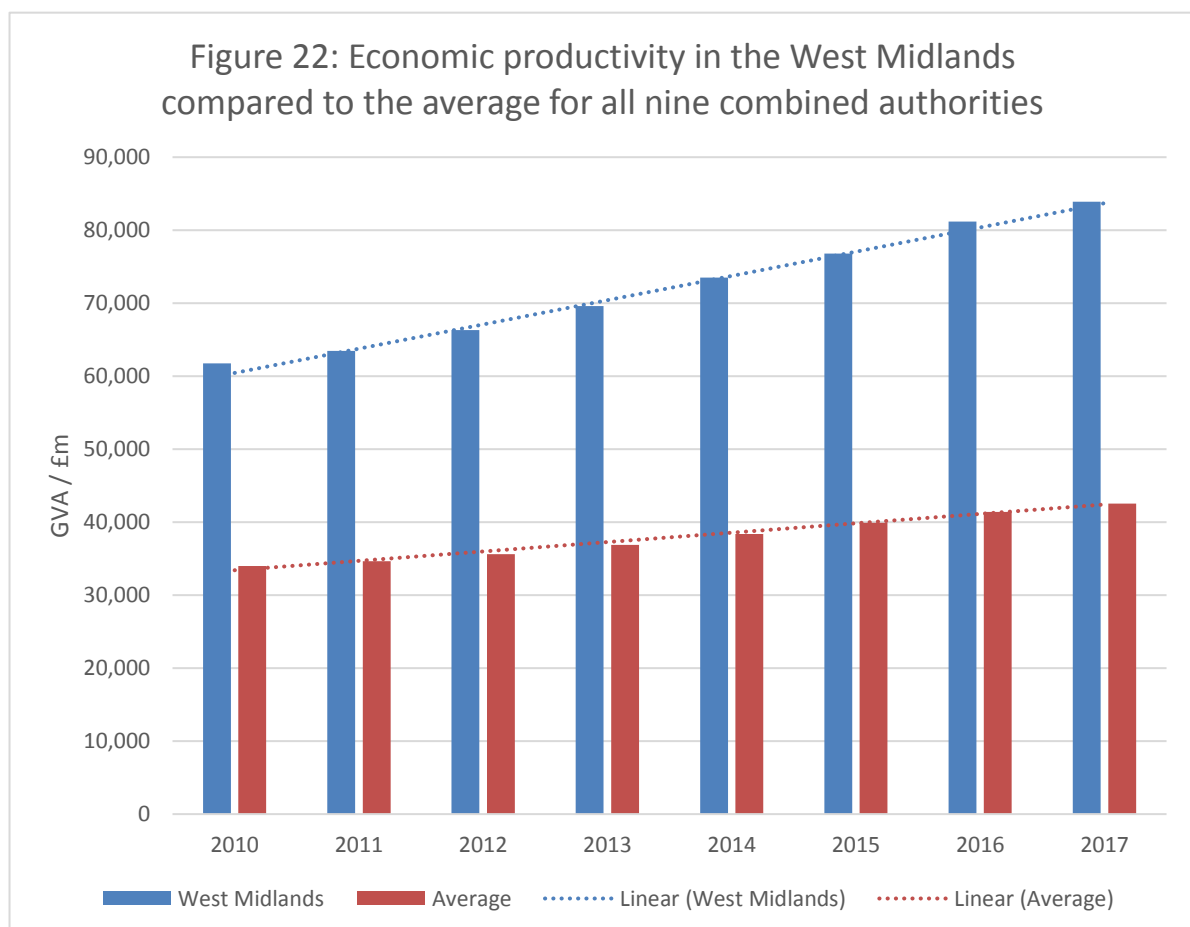
Figure 23: Economic productivity per head in the West Midlands compared to the average for all nine combined authorities
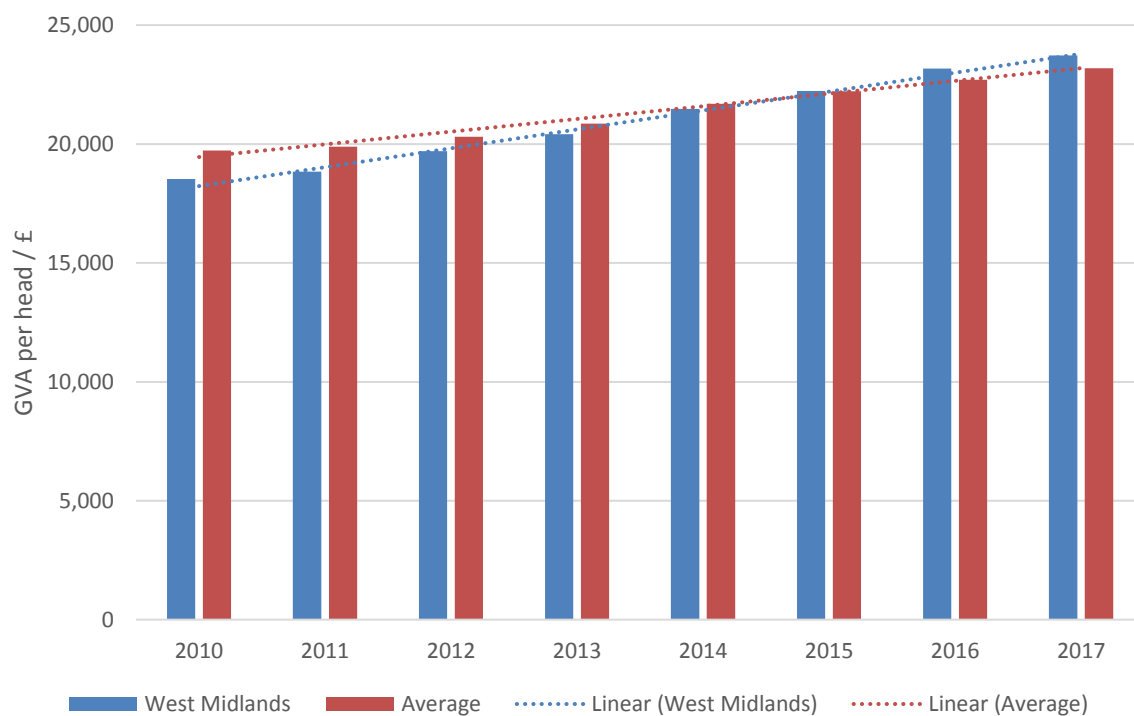
Figure 24: % change in economic productivity in combined authority areas
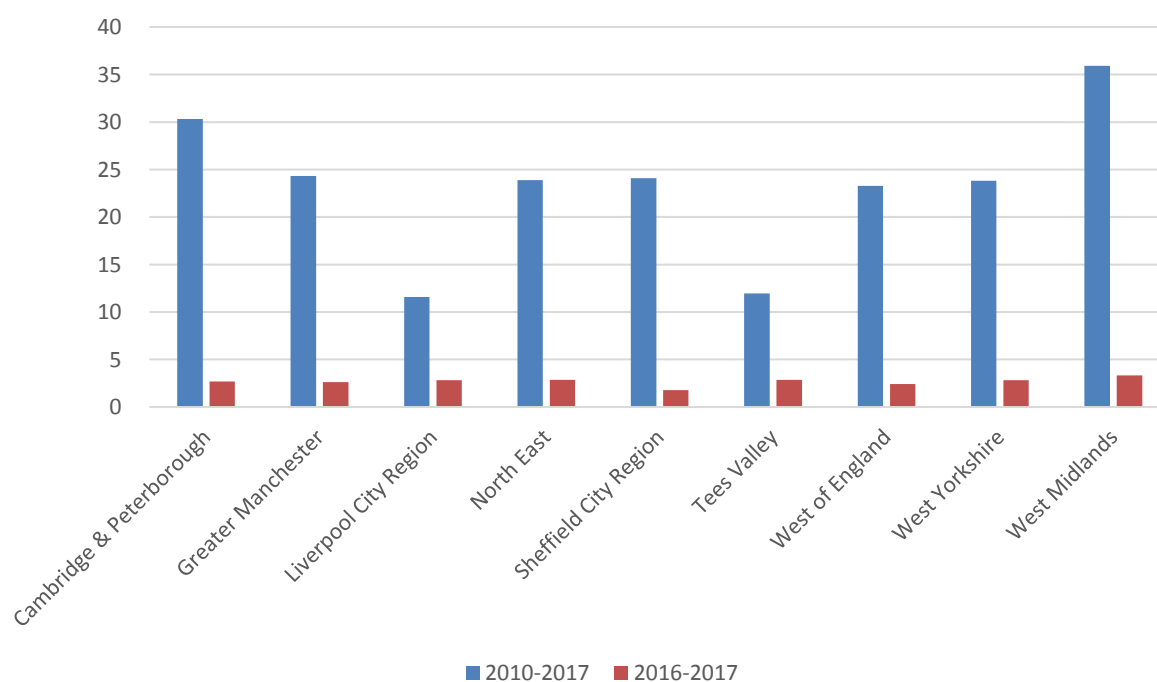
Figure 25: % change in economic productivity per head in combined authority areas
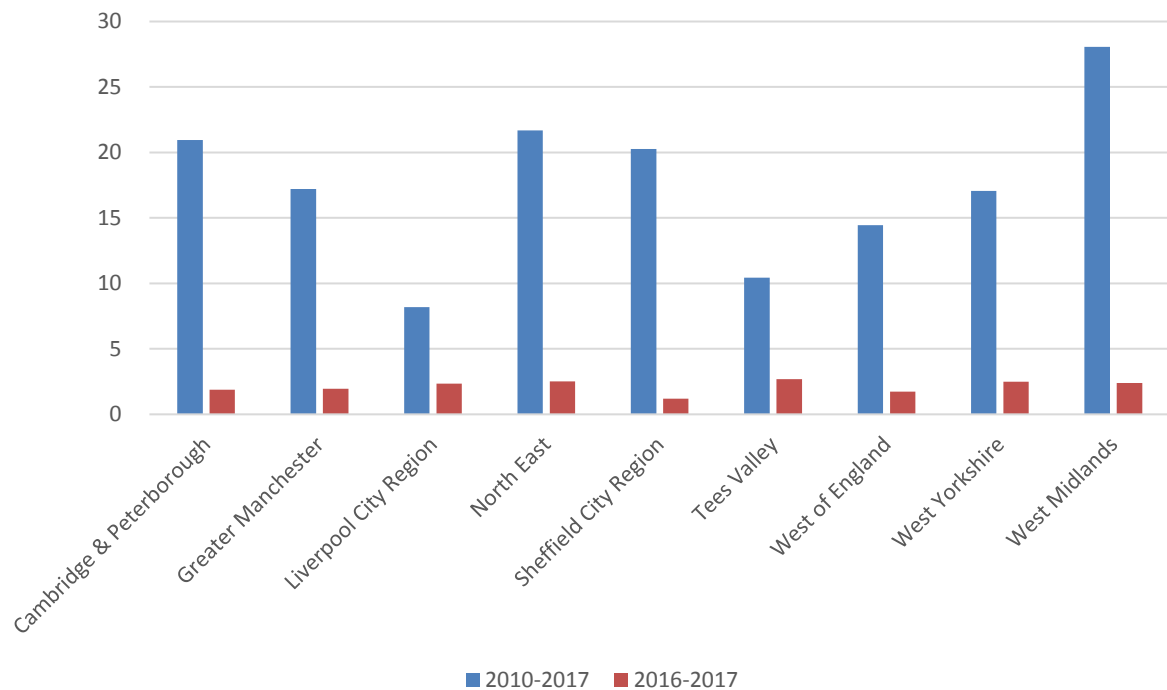
CA Economic Productivity League Tables

Performance in most recent available year			Progress between baseline and latest available year		
Rank (Chg.)	**CA**	**GVA £m (2017)**	**Rank** (Chg.)	**CA**	**GVA £m % (2010-2017)**
1 (-)	West Midlands	83,894	**1** (-)	West Midlands	+35.9
2 (-)	Greater Manchester	65,528	**2** (-)	Cambridge & Peterborough	+30.3
3 (-)	West Yorkshire	58,578	**3** (↑4)	Greater Manchester	+24.3
4 (-)	North East	40,069	**4** (↓1)	Sheffield City Region	+24.1
5 (-)	West of England	33,700	**5** (↑1)	North East	+23.9
6 (-)	Sheffield City Region	31,880	**6** (↓1)	West Yorkshire	+23.8
7 (-)	Liverpool City Region	30,863	**7** (↓3)	West of England	+23.3
8 (-)	Cambridge & Peterborough	25,178	**8** (↑1)	Tees Valley	+12.0
9 (-)	Tees Valley	13,144	**9** (↓1)	Liverpool City Region	+11.6

CA Per Capita Economic Productivity League Tables

Performance in most recent available year	Progress between baseline and latest available year

Rank (Chg.)	CA	GVA £ (2017)	Rank (Chg.)	CA	GVA £ % (2010-2017)
1 (-)	West of England	29,932	**1** (-)	West Midlands	+28.1
2 (-)	Cambridge & Peterborough	29,479	**2** (↑1)	North East	+21.7
3 (-)	Greater Manchester	23,880	**3** (↑1)	Cambridge & Peterborough	+21.0
4 (-)	West Midlands	23,731	**4** (↓2)	Sheffield City Region	+20.3
5 (-)	West Yorkshire	22,956	**5** (↑2)	Greater Manchester	+17.2
6 (-)	Tees Valley	20,638	**6** (↓1)	West Yorkshire	+17.1
7 (-)	North East	19,733	**7** (↓1)	West of England	+14.4
8 (↑1)	Sheffield City Region	19,164	**8** (-)	Tees Valley	+10.4
9 (↓1)	Liverpool City Region	19,150	**9** (-)	Liverpool City Region	+8.2

2.11 Economic: Emissions Intensity Ratio (NEW)

How can and why should the WMCA measure an Emissions Intensity Ratio?
In essence, an Emissions Intensity Ratio measures the impact of economic growth on carbon emissions. In other words, it is a way of assessing whether the economic growth in an area is being achieved in a sustainable manner with the environment in mind.

Influencing factors: This is largely down to the type and operation of local business and whether local investment decisions have considered environmental outcomes.

Target: No target set to date but best in class is represented by West of England CA, whose emissions intensity is 163 tCO_2/£m, 52 units lower than in the West Midlands.

Current progress: The West Midlands emits slightly less CO_2 on average per £million GVA and has seen a 39% improvement in this since 2010, the second-most successful CA while being the most successful in largest overall economic growth whilst reducing carbon emissions.

Local good practice: Coventry and Birmingham local authority areas have an EIR which is on a par with the West of England 'best-in-class' average, of 162 and 163 units. Both of these areas have made strong improvements since 2010.

Local support required: Warwickshire is the poorest performing area by some distance, not helped by the higher per capita carbon emissions in Rugby and North Warwickshire.

Recommendations: Ensure the existing good progress is built on by factoring in environmental decisions into all investments. The newly published WMCA Local

Industrial Strategy[13] recognises the importance of this which is encouraging; it now needs to be translated into action.

- In the previous reporting period (2010-15), the WMCA was the leading CA in terms of overall economic performance while also reducing carbon emissions.
- This trend has continued (figure 26), with the emissions intensity ratio, the amount of CO_2 emitted per £million GVA, continuing to decrease markedly between 2010 and 2016, by an average of 39.2% in the West Midlands, compared to a CA average of 37.4% (figure 27).
- The West Midlands has seen a more rapid decrease in carbon intensity than any other CA since 2010, with the exception of North East CA which has seen a decrease of 47.7% (figure 28).
- 215 tonnes CO_2 was emitted per £million GVA in 2017 in the West Midlands, compared to the CA average of 230 tonnes CO_2. Overall the West Midlands is ranked fifth out of nine CAs.

Figure 26: Change in carbon emissions and economic productivity in WMCA between 2010 and 2016


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[13] https://bit.ly/2wfj6cd
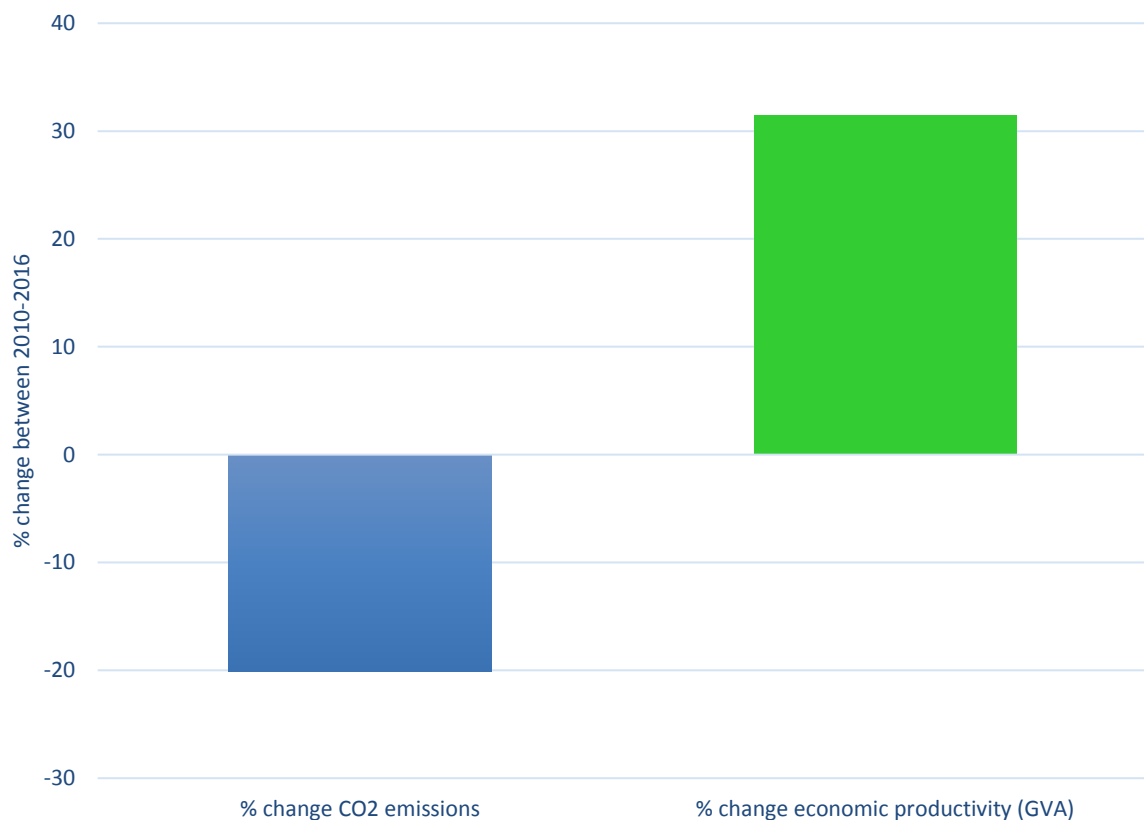
Figure 27: Emissions Intensity Ratio in the West Midlands compared to the average for all nine combined authorities
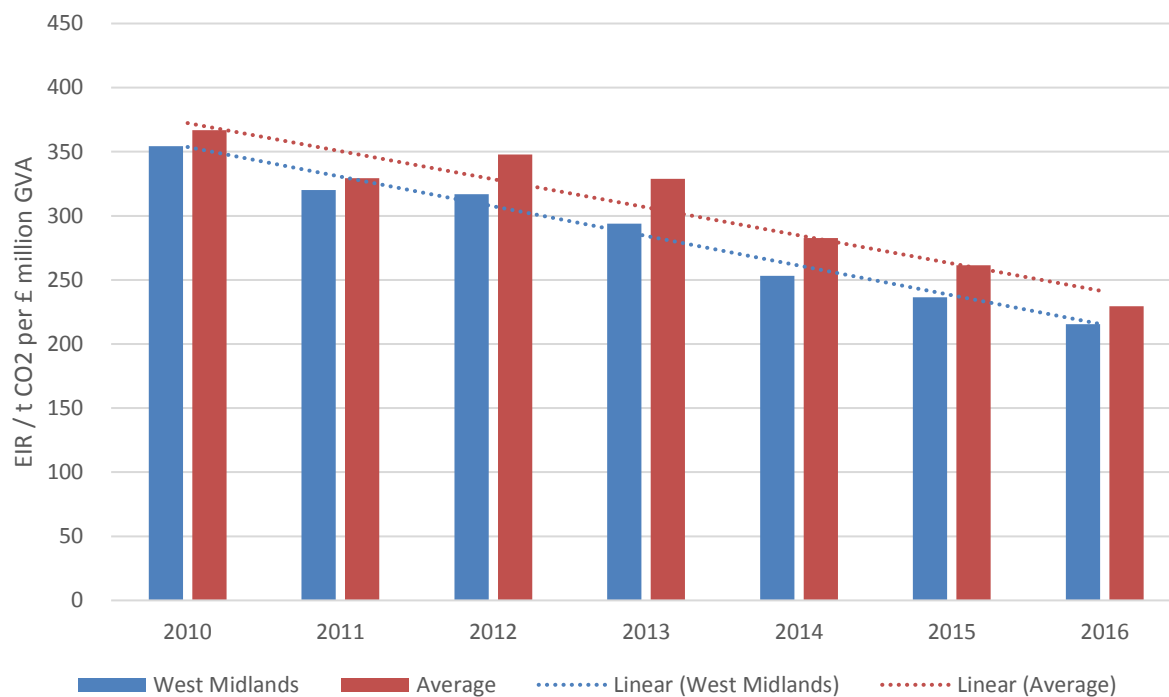
Figure 28: % change in Emissions Intensity Ratio in all nine combined authorities (negative numbers = a reduction in EIR therefore progress made)
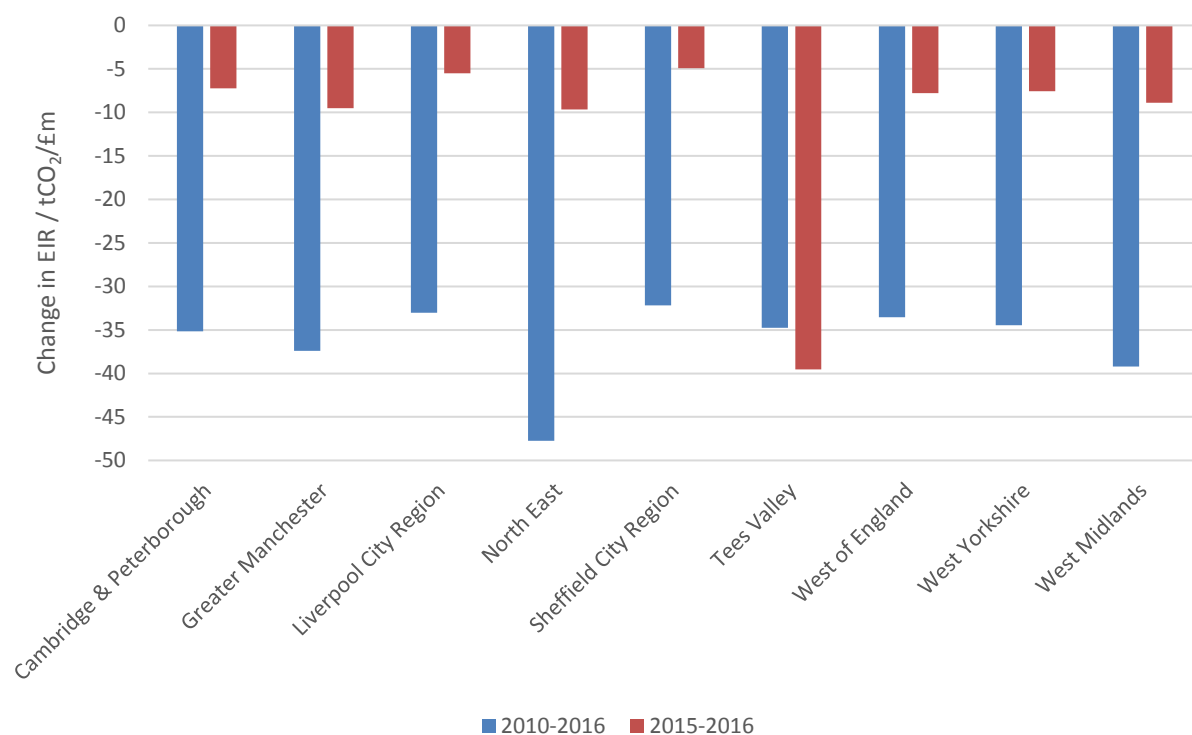
CA Emissions Intensity Ratio League Tables

Performance in most recent available year

Rank (Chg.)	CA	tCO$_2$/£m GVA (2016)
1 (-)	West of England	163.4
2 (-)	Greater Manchester	195.8
3 (↑1)	North East	210.3
4 (↓1)	West Yorkshire	214.4
5 (-)	West Midlands	215.4
6 (-)	Cambridge & Peterborough	229.8
7 (-)	Liverpool City Region	240.6
8 (-)	Sheffield City Region	306.1
9 (-)	Tees Valley	569.2

Progress between baseline and latest available year

Rank (Chg.)	CA	% (2010-2016)
1 (-)	North East	-47.7
2 (-)	West Midlands	-39.2
3 (-)	Greater Manchester	-37.4
4 (-)	Cambridge & Peterborough	-35.1
5 (↑4)	Tees Valley	-34.7
6 (↓1)	West Yorkshire	-34.5
7 (↑1)	West of England	-33.5
8 (↓2)	Liverpool City Region	-33.0
9 (↓2)	Sheffield City Region	-32.2

2.12 WMCA summary of key findings

The below table provides a summary of the metrics including how they correlate to the relevant targets that the WMCA has in place.

Metric (Strategic link: PMF =WMCA Performance Management Framework, EBP = WMCA Environment Board Priority)	Latest figure in specified year	Ranking out of 9 CAs (Change compared to last year)	Rate of change since specified year	Rate of change ranking out of 9 CAs	WMCA target	Scale of challenge
Environment						
Total carbon emissions (PMF E.1) (EBP)	21,043 ktCO$_2$ (2016)	9 (-)	-20.1% (2010)	7 (↓2)	40% reduction from 2010 to 2030	By 2030, emissions should be ≤15,795 ktCO$_2$
Per capita carbon emissions (EBP)	5.1 ktCO$_2$ (2016)	4 (-)	-22.9% (2010)	6 (-)	-	-
Air quality (PMF E.2) (EBP)	46 days breached (2018)	6 (↑1)	+8 days breached (2010)	4= (↓1)	Reduction to 1 day breached by 2030	45 less days breached per year by 2030
Renewable electricity generation (EBP)	52,959 MWh (2017)	8 (-)	+68.9% (2014)	3 (↑1)	-	-

Metric (Strategic link: PMF =WMCA Performance Management Framework, EBP = WMCA Environment Board Priority)	Latest figure in specified year	Ranking out of 9 CAs (Change compared to last year)	Rate of change since specified year	Rate of change ranking out of 9 CAs	WMCA target	Scale of challenge
Waste Recycled – Household (EBP)	40.2% (2017)	6 (-)	-1.3% (2010)	8 (↓1)	-	-
Waste Recycled – Non-household (EBP)	34.8% (2017)	5 (-)	-1.7% (2014)	6 (↑2)	-	-
Sites in positive conservation management (EBP)	40.2% (2017)	8 (-)	+4.2% (2010)	7 (↑1)	-	-
Social						
Health inequality (males) (PMF P.14)	8.3 years (2016)	4 (↓1)	-0.5 years (2010)	6 (-)	Reduction in average health inequality gap by 5.3 years by 2030	Further reduction of 3.0 years required by 2030
Health inequality (females) (PMF P.14)	6.8 years (2016)	4 (-)	+0.3 years (2010)	4= (↓1)	Reduction in average health inequality gap by 3.9 years by 2030	Further reduction of 2.9 years required by 2030
Fraction of mortality attributable to particulate air pollution (NEW – EBP)	5.1% (2017)	8 (↑1)	-0.3% (2011)	5= (↑3)	-	-
Fuel poverty (EBP)	12.6% (2016)	6 (↑1)	-0.4% (2011)	2= (↓2)	-	-
Economic						
Total economic	£83,894m (2017)	1 (-)	+35.9% (2010)	1 (-)	-	-

Metric (Strategic link: PMF =WMCA Performance Management Framework, EBP = WMCA Environment Board Priority)	Latest figure in specified year	Ranking out of 9 CAs (Change compared to last year)	Rate of change since specified year	Rate of change ranking out of 9 CAs	WMCA target	Scale of challenge
productivity (EBP)						
Per capita economic productivity (PMF O.1)	£23,731 (2017)	4 (-)	+28.1% (2010)	1 (-)	£33,604 by 2030	41.6% increase required by 2030
Emissions intensity ratio (NEW – EBP)	215.4 tCO_2 per £ million GVA (2016)	5 (-)	-39.2% (2010)	2 (-)	-	-

*West Midlands ranks in these positions whether the Drax power plant in West Yorkshire CA is included or not.

Key to colours:

Green = Rank 1-3	Amber = Rank 4-6	Red = Rank 7-9
Near to, or best in class and where this a set target making good progress	Progress but improvements required to be best in class, or to meet target if set	Significant improvements required to be best in class, or meet target if set

2.13 Overall sustainability league tables of all combined authorities

The league tables overleaf represent the ranking of all combined authorities based on their rankings given for each individual metric as shown in sections 2.1 to 2.11. The first is the snapshot of their sustainability achievement in the latest available year (2016-2018 depending on data source) and the second is a snapshot of their progress since the baseline data (2010-2014 depending on data source). They begin to paint a useful picture of which authorities are doing well and in what areas and which areas need further support.

Overall league table reflecting CA area sustainability progress in the latest available year (2016-2018 depending on data source)

Rank	CA	Environmental							Social				Economic			Total	Average ranking	Change since last year	
		CO_2	CO_2 per cap	Air quality	Renew Electric (-Drax)*	Recycle non-house	Recycle house	Positive Cons. Mgt.	Health Inequal (F)	Health inequal (M)	Partic. mortal.	Fuel poverty	Econ product	Econ product per cap	Emission intens.			Average ranking	Overall Ranking
1	West of England	1	3	4	5	1	1	3	2	2	7	1	5	1	1	37	2.6	+0.1	-
2	Cambridge & Peterborough	2	8	8	1	7	2	1	1	1	9	2	8	2	6	58	4.1	+0.3	-
3	North East	5	1	3	2	2	9	4	6	6	1	7	4	7	3	60	4.3	-0.7	↑2
4	West Yorkshire	8	6	7	7	6	5	5	3	3	3	3	3	5	4	68	4.9	0.0	-
5	Greater Manchester	7	2	2	9	9	3	6	7	7	5	5	2	3	2	69	4.9	+0.1	↓2
6	West Midlands	9	4	6	8	5	6	8	4	4	8	6	1	4	5	78	5.6	-0.2	↑2
7	Sheffield City Region	6	7	5	3	8	4	9	5	5	4	4	6	8	8	82	5.9	+0.5	↓1
8	Liverpool City Region	3	5	1	6	3	7	7	8	8	5	8	7	9	7	84	6.0	+0.6	↓2
9	Tees Valley	4	9	3	4	4	8	2	9	9	2	9	9	6	9	87	6.2	-0.4	-

*Note – where Drax power plant data under renewable electricity are included, overall rank remains the same, albeit with minor changes to the total/average scores.

Key to colours:

Green = Rank 1-3	Amber = Rank 4-6	Red = Rank 7-9
Near to, or best in class and where this a set target making good progress	Progress but improvements required to be best in class, or to meet target if set	Significant improvements required to be best in class, or meet target if set

Overall league table reflecting CA area <u>overall</u> sustainability progress since the baseline year (2010-2014 depending on data source) up to latest available data

Rank	CA	Environmental							Social				Economic			Total	Average ranking	Change since last year	
		CO_2	CO_2 per cap	Air quality	Renew Electric (-Drax)*	Recycle non-house	Recycle house	Positive Cons. Mgt.	Health Inequal (F)	Health inequal (M)	Partic. mortal.	Fuel poverty	Econ product	Econ product per cap	Emission intens.			Average ranking	Overall Ranking
1	Greater Manchester	4	4	6	6	5	1	2	3	3	1	5	3	5	3	51	3.6	-0.6	-
2	North East	1	1	3	8	3	9	3	8	3	4	8	5	2	1	59	4.2	-0.6	↑2
3	Cambridge & Peterborough	8	7	1	7	1	5	8	1	5	8	1	2	3	4	61	4.4	+0.2	↓2
4	West Midlands	7	6	4	3	6	8	7	4	6	5	2	1	1	2	62	4.4	-0.8	↑2
5	West Yorkshire	6	8	4	4	4	4	9	2	2	3	6	6	6	6	70	5.0	+0.8	↓4
6	Tees Valley	2	3	3	5	9	7	1	6	1	7	7	8	8	5	72	5.1	-1.3	↑3
7	West of England	5	5	7	2	8	2	4	6	6	8	2	7	7	7	76	5.4	0.0	-
8	Liverpool City Region	3	2	2	9	2	5	5	4	7	5	8	9	9	8	78	5.6	+0.8	↓4
9	Sheffield City Region	9	9	8	1	7	3	6	9	8	1	2	4	4	9	80	5.7	+0.3	↓1

*Note – where Drax power plant data under renewable electricity are included, West Yorkshire is ranked sixth and Tees Valley fifth, with minor changes to the total/average scores against most CAs.

Key to colours:

Green = Rank 1-3	Amber = Rank 4-6	Red = Rank 7-9
Near to, or best in class and where this a set target making good progress	Progress but improvements required to be best in class, or to meet target if set	Significant improvements required to be best in class, or meet target if set

![sustainability west midlands logo]

3 Results: comparison between WMCA LEPs and local authorities

In this year's report, we have provided a more in-depth analysis of which are the best and worst performing LEP and local authority areas within the WMCA against the metrics analysed. As with the previous section, green coloured font emphasises a change for the better and red a change for the worse.

The below list shows which local authorities fit within the WMCA boundary.

- Birmingham (Unitary, West Midlands conurbation)
- Bromsgrove (District, Worcestershire)
- Cannock Chase (District, Staffordshire)
- Coventry (Unitary, West Midlands conurbation)
- Dudley (Unitary, West Midlands conurbation)
- East Staffordshire (District, Staffordshire)
- Lichfield (District, Staffordshire)
- Redditch (District, Worcestershire)
- Sandwell (Unitary, West Midlands conurbation)
- Solihull (Unitary, West Midlands conurbation)
- Tamworth (District, Staffordshire)
- Walsall (Unitary, West Midlands conurbation)
- Warwickshire (County)
- Wolverhampton (Unitary, West Midlands conurbation)
- Wyre Forest (District, Worcestershire)

3.1 Environment: Carbon emissions

Absolute emissions: trends

LEP	Local authority	Latest figure ktCO$_2$ (2016)	Change / ktCO$_2$		% Change	
			2010-2016	2015-2016	2010-2016	2015-2016
Black Country	**Dudley**	1,219.3	-410.2	-65.8	-25.2	-5.1
	Sandwell	1,467.5	-450.3	-115.3	-23.5	-7.3
	Walsall	1,124.4	-319.3	-61.2	-22.1	-5.2
	Wolverhampton	1,008.4	-340.6	-69.7	-25.3	-6.5
	BCLEP AVERAGE	**1,204.9**	**-380.1**	**-78.0**	**-24.0**	**-6.1**
Coventry & Warwickshire	**Coventry**	1,387.1	-397.7	-73.2	-22.3	-5.0
	North Warwickshire	999.8	-147.6	-24.0	-12.9	-2.3
	Nuneaton and Bedworth	547.5	-142.4	-23.6	-20.6	-4.1
	Rugby	1,958.7	-145.5	111.6	-6.9	6.0
	Stratford-on-Avon	1,047.3	-129.2	-30.8	-11.0	-2.9
	Warwick	936.9	-178.6	-34.7	-16.0	-3.6
	CWLEP AVERAGE	**1,146.2**	**-570.6**	**-37.3**	**-14.2**	**-1.1**
	Birmingham	4,461.2	-1,498.4	-225.2	-25.1	-4.8

Greater Birmingham and Solihull	**Bromsgrove**	707.7	-99.2	-10.2	-12.3	-1.4
	Cannock Chase	405.1	-111.5	-21.3	-21.6	-5.0
	East Staffordshire	751.2	-218.4	-34.9	-22.5	-4.4
	Lichfield	659.1	-118.6	-25.4	-15.2	-3.7
	Redditch	334.2	-125.7	-21.5	-27.3	-6.1
	Solihull	1,327.3	-227.4	-58.0	-14.6	-4.2
	Tamworth	285.0	-98.9	-24.9	-25.8	-8.0
	Wyre Forest	415.8	-121.7	-21.6	-22.6	-4.9
	GBSLEP AVERAGE	**1,038.5**	**-291.1**	**-49.2**	**-21.9**	**-4.5**
	WMCA AVERAGE	**1,402.9**	**-352.1**	**-55.3**	**-20.1**	**-3.8**

Absolute emissions: Best and worst performing local authorities (LAs)

Lowest emitting LAs 2016 (top 5)	ktCO$_2$	Highest emitting LAs 2016 (bottom 5)	ktCO$_2$
1. Tamworth	285	1. Birmingham	4,461
2. Redditch	334	2. Rugby	1,959
3. Cannock Chase	405	3. Sandwell	1,468
4. Wyre Forest	416	4. Coventry	1,387
5. Lichfield	659	5. Solihull	1,327

Best progress since 2010 (top 5)	% change	Poorest progress since 2010 (bottom 5)	% change
1. Redditch	-27.3	1. Rugby	-6.9
2. Tamworth	-25.8	2. Stratford-on-Avon	-11.0
3. Wolverhampton	-25.3	3. Bromsgrove	-12.3
4. Dudley	-25.2	4. North Warwickshire	-12.9
5. Birmingham	-25.1	5. Solihull	-14.6

Per capita emissions: trends

LEP	Local authority	Latest figure tCO$_2$ (2016)	Change / tCO$_2$ 2010-2016	Change / tCO$_2$ 2015-2016	% Change 2010-2016	% Change 2015-2016
Black Country	**Dudley**	3.8	-1.4	-0.2	-26.4	-5.5
	Sandwell	4.5	-1.7	-0.4	-27.4	-8.3
	Walsall	4.0	-1.4	-0.3	-25.5	-6.2
	Wolverhampton	3.9	-1.5	-0.3	-28.3	-7.5
	BCLEP AVERAGE	**4.1**	**-1.5**	**-0.3**	**-26.9**	**-6.9**
Coventry & Warwickshire	**Coventry**	3.9	-1.8	-0.3	-31.4	-7.4
	North Warwickshire	15.8	-2.7	-0.5	-14.4	-3.0
	Nuneaton and Bedworth	4.3	-1.2	-0.2	-22.5	-4.9
	Rugby	18.6	-2.6	0.9	-12.4	5.2
	Stratford-on-Avon	8.5	-1.3	-0.3	-13.3	-3.6
	Warwick	6.7	-1.4	-0.3	-16.8	-4.0
	CWLEP AVERAGE	**9.6**	**-1.8**	**-0.1**	**-16.0**	**-1.2**

Greater Birmingham and Solihull						
	Birmingham	4.0	-1.7	-0.3	-29.6	-6.1
	Bromsgrove	7.3	-1.3	-0.2	-15.2	-2.4
	Cannock Chase	4.1	-1.2	-0.2	-22.9	-5.0
	East Staffordshire	6.4	-2.2	-0.3	-25.1	-5.0
	Lichfield	6.4	-1.3	-0.3	-17.2	-4.0
	Redditch	3.9	-1.6	-0.3	-28.6	-6.3
	Solihull	6.3	-1.3	-0.3	-17.0	-4.8
	Tamworth	3.7	-1.3	-0.3	-26.2	-7.9
	Wyre Forest	4.2	-1.3	-0.2	-24.2	-5.3
	GBSLEP AVERAGE	**5.1**	**-1.5**	**-0.3**	**-22.2**	**-4.9**
	WMCA AVERAGE	**5.1**	**-1.5**	**-0.3**	**-22.9**	**-5.0**

Per capita emissions: Best and worst performing LAs

Lowest per cap LAs 2016 (top 5)	tCO₂	Highest per cap LAs 2016 (bottom 5)	tCO₂
1. Tamworth	3.7	1. Rugby	18.6
2. Dudley	3.8	2. North Warwickshire	15.8
3= Coventry	3.9	3. Stratford-on-Avon	8.5
3= Redditch	3.9	4. Bromsgrove	7.3
3= Wolverhampton	3.9	5. Warwick	6.7

Best progress since 2010 (top 5)	tCO₂ change	Poorest progress since 2010 (bottom 5)	tCO₂ change
1. North Warwickshire	-2.7	1= Cannock Chase	-1.2
2. Rugby	-2.6	1= Nuneaton & Bedworth	-1.2
3. East Staffordshire	-2.2	3= Bromsgrove	-1.3
4. Coventry	-1.8	3= Lichfield	-1.3
5= Birmingham	-1.7	3= Solihull	-1.3
5= Sandwell	-1.7	3= Stratford-on-Avon	-1.3
		3= Tamworth	-1.3
		3= Wyre Forest	-1.3

3.2   Environment: Air quality

The data reflecting air quality cannot be broken down into local authority or LEP area (see annex), therefore further analysis for the WMCA cannot be carried out. Please refer to the Fraction of mortality attributable to particulate air pollution metric (section 3.9) for a breakdown of the health impacts of air quality by local authority, and associated analysis.

3.3 Environment: Renewable electricity generation

Trends

LEP	Local authority	Latest figure MWh (2017)	Change / MWh 2014-2017	Change / MWh 2016-2017	% Change 2014-2017	% Change 2016-2017
Black Country	**Dudley**	25,857	3,757	-1,156	17.0	-4.3
	Sandwell	93,372	83,086	74,990	807.8	408.0
	Walsall	17,206	-631	632	-3.5	3.8
	Wolverhampton	20,333	8,101	1,608	66.2	8.6
	BCLEP AVERAGE	**39,192**	**23,578**	**19,019**	**151.0**	**94.3**
Coventry & Warwickshire	**Coventry**	10,131	4,316	412	74.2	4.2
	North Warwickshire	99,461	47,014	-3,311	89.6	-3.2
	Nuneaton and Bedworth	13,703	3,705	-1,843	37.1	-11.9
	Rugby	38,730	-6,057	-1,944	-13.5	-4.8
	Stratford-on-Avon	101,393	82,285	40,386	430.6	66.2
	Warwick	45,399	10,154	1,840	28.8	4.2
	CWLEP AVERAGE	**51,470**	**23,570**	**5,923**	**84.5**	**13.0**
Greater Birmingham and Solihull	**Birmingham**	96,393	16,955	-33,119	21.3	-25.6
	Bromsgrove	13,405	-3,204	-2,634	-19.3	-16.4
	Cannock Chase	103,345	3,051	-2,303	3.0	-2.2
	East Staffordshire	70,042	56,461	18,300	415.7	35.4
	Lichfield	15,505	10,506	2,762	210.2	21.7
	Redditch	3,986	1,751	144	78.3	3.7
	Solihull	7,739	2,594	230	50.4	3.1
	Tamworth	11,335	-1,337	-585	-10.6	-4.9
	Wyre Forest	7,052	1,553	125	28.2	1.8
	GBSLEP AVERAGE	**36,534**	**9,814**	**-1,898**	**36.7**	**-4.9**
	WMCA AVERAGE	**52,959**	**21,604**	**6,302**	**68.9**	**13.5**

Best and worst performing LAs

Most energy generated by renewables 2017 (top 5)	MWh	Least energy generated by renewables 2017 (bottom 5)	MWh
1. Cannock Chase	103,345	1. Redditch	3,986
2. Stratford-on-Avon	101,393	2. Wyre Forest	7,052
3. North Warwickshire	99,461	3. Solihull	7,739
4. Birmingham	96,393	4. Coventry	10,131
5. Sandwell	93,372	5. Tamworth	11,335

Best progress since 2014 (top 5)	% change	Poorest progress since 2014 (bottom 5)	% change
1. Sandwell	+807.8	1. Bromsgrove	-19.3
2. Stratford-on-Avon	+430.6	2. Rugby	-13.5

3. East Staffordshire	+415.7	3. Tamworth	-10.6
4. Lichfield	+210.2	4. Walsall	-3.5
5. North Warwickshire	+89.6	5. Cannock Chase	+3.0

3.4 Environment: Recycling

Non-household waste: trends

LEP	Local authority	Latest figure % recycled (2017)	Change / % recycled		% Change	
			2014-2017	2016-2017	2014-2017	2016-2017
Black Country	**Dudley**	21.7	-2.2	-2.0	-9.2	-8.4
	Sandwell	30.2	7.0	9.4	30.2	45.2
	Walsall	29.4	-6.3	-2.6	-17.6	-8.1
	Wolverhampton	25.9	-0.1	1.9	-0.4	7.9
	BCLEP AVERAGE	**26.8**	**-0.4**	**1.7**	**-1.5**	**6.7**
Coventry & Warwickshire	**Coventry**	28.5	-4.0	-5.2	-12.3	-15.4
	North Warwickshire	61.1	53.1	-338.9	663.8	-84.7
	Nuneaton and Bedworth	0.0	-	-	-	-
	Rugby	9.7	-12.9	-7.9	-57.1	-44.9
	Stratford-on-Avon	40.8	-7.6	-9.9	-15.7	-19.5
	Warwick	0.0	-	-	-	-
	Warwickshire Council**	32.6	-39.4	-12.4	-54.7	-27.6
	CWLEP AVERAGE	**24.7**	**-1.5**	**-53.5**	**-5.9**	**-68.4**
Greater Birmingham and Solihull	**Birmingham**	18.6	1.7	-0.4	10.1	-2.1
	Bromsgrove	9.2	4.8	2.3	109.1	33.3
	Cannock Chase	0.7	0.7	0.7	-	-
	East Staffordshire	9.4	-30.9	-3.1	-76.7	-24.8
	Lichfield	71.0	42.9	43.8	152.7	161.0
	Redditch	10.6	10.2	-1.1	2,550.0	-9.4
	Solihull	86.6	-60.2	-10.0	-41.0	-10.4
	Staffordshire Council**	35.4	-41.6	-33.3	-54.0	-48.5
	Tamworth	113.9	50.4	110.2	79.4	2,978.4
	Worcestershire Council**	65.0	-5.4	-2.3	-7.7	-3.4
	Wyre Forest	11.0	11.0	2.3	-	26.4
	GBSLEP AVERAGE	**39.2**	**-1.5**	**9.9**	**-3.7**	**33.9**
	WMCA AVERAGE	**34.8**	**-1.7**	**1.9**	**-4.5**	**5.7**

*It is assumed that the reason this figure is greater than 100% is because Tamworth recycles other authorities' non-household waste as well as its own (see annex).

**Included due to the tier structure of local authorities and the effect this has on waste management and collection (see annex).

Non-household waste: Best and worst performing LAs

Most non-household waste recycled 2017 (top 5)	% recycled	Least non-household waste recycled 2017 (bottom 5)	% recycled
1. Tamworth*	113.9	1= Nuneaton & Bedworth	0
2. Solihull	86.6	1= Warwick	0
3. Lichfield	71.0	3. Cannock Chase	0.7
4. Worcestershire Council**	65.0	4. Bromsgrove	9.2
5. North Warwickshire	61.1	5. East Staffordshire	9.4

Best progress since 2014 (top 5)	Change in % recycled	Poorest progress since 2014 (bottom 5)	Change in % recycled
1. North Warwickshire	+53.1	1. Solihull	-60.2
2. Tamworth	+50.4	2. Staffordshire Council**	-41.6
3. Lichfield	+42.9	3. Warwickshire Council**	-39.4
4. Wyre Forest	+11.0	4. East Staffordshire	-30.9
5. Redditch	+10.2	5. Rugby	-12.9

Household waste: trends

LEP	Local authority	Latest figure % recycled (2017)	Change / % recycled		% Change	
			2010-2017	2016-2017	2010-2017	2016-2017
Black Country	**Dudley**	35.5	1.2	-1.8	3.5	-4.8
	Sandwell	39.9	7.3	-1.1	22.4	-2.7
	Walsall	41.3	-7.4	0.0	-15.2	0.0
	Wolverhampton	41.9	6.0	-0.1	16.7	-0.2
	BCLEP AVERAGE	**39.7**	**1.8**	**-0.8**	**-6.3**	**-1.9**
Coventry & Warwickshire	**Coventry**	32.9	-4.4	3.0	-11.8	10.0
	North Warwickshire	45.4	14.1	-0.8	45.0	-1.7
	Nuneaton and Bedworth	42.9	10.2	-0.9	31.2	-2.1
	Rugby	44.6	-6.5	-5.5	-12.7	-11.0
	Stratford-on-Avon	60.3	1.0	-1.0	1.7	-1.6
	Warwick	52.3	3.2	-2.4	6.5	-4.4
	Warwickshire Council**	51.4	2.3	-3.0	4.7	-5.5
	CWLEP AVERAGE	**47.1**	**2.8**	**-1.5**	**-3.8**	**-3.1**
Greater Birmingham and Solihull	**Birmingham**	20.7	-10.4	-3.7	-33.4	-15.2
	Bromsgrove	43.9	3.4	-0.8	8.4	-1.8
	Cannock Chase	44.4	-5.4	-1.0	-10.8	-2.2
	East Staffordshire	43.9	-6.1	-5.4	-12.2	-11.0
	Lichfield	50.4	-6.2	-1.9	-11.0	-3.6
	Redditch	29.7	1.1	-1.3	3.8	-4.2
	Solihull	40.6	-3.8	-1.8	-8.6	-4.2
	Staffordshire Council**	50.4	-2.6	1.2	-4.9	2.4

	Tamworth	42.8	-4.4	-3.0	-9.3	-6.6
	Worcestershire Council**	42.9	0.1	0.2	0.2	0.5
	Wyre Forest	32.8	5.2	0.0	18.8	0.0
	GBSLEP AVERAGE	**40.2**	**-2.6**	**-1.6**	**-6.0**	**-3.8**
	WMCA AVERAGE	**40.2**	**-1.3**	**-1.2**	**-5.8**	**-2.8**

Household waste: Best and worst performing LAs

Most household waste recycled 2017 (top 5)	% recycled	Least household waste recycled 2017 (bottom 5)	% recycled
1. Stratford-on-Avon	60.3	1. Birmingham	20.7
2. Warwick	52.3	2. Redditch	29.7
3. Warwickshire Council**	51.4	3. Wyre Forest	32.8
4= Lichfield	50.4	4. Coventry	32.9
4= Staffordshire Council**	50.4	5. Dudley	35.5

Best progress since 2010 (top 5)	Change in % recycled	Poorest progress since 2010 (bottom 5)	Change in % recycled
1. North Warwickshire	+14.1	1. Birmingham	-10.4
2. Nuneaton & Bedworth	+10.2	2. Walsall	-7.4
3. Sandwell	+7.3	3. Rugby	-6.5
4. Wolverhampton	+6.0	4. Lichfield	-6.2
5. Wyre Forest	+5.2	5. East Staffordshire	-6.1

**Included due to the tier structure of local authorities and the effect this has on waste management and collection (see annex).

3.5   Environment: Positive conservation management (PCM)

Trends

Only county and unitary authorities' data are available for this metric; data are not collected at district level (see annex). Blue figures indicate where data were estimated for latest year.

LEP	Local authority	Latest figure % in PCM (2017)	Change / % in PCM		% Change	
			2010-2017	2016-2017	2010-2017	2016-2017
Black Country	**Dudley**	21	0	0	0.0	0.0
	Sandwell	34	4	0	13.3	0.0
	Walsall	23	-1	-1	-4.2	-4.2
	Wolverhampton	20	0	0	0.0	0.0
	BCLEP AVERAGE	**24.5**	**0.8**	**-0.3**	**3.2**	**-1.0**
Coventry & Warwickshire	**Coventry**	58	-2	-1	-3.3	-1.7
	Warwickshire	42	3	-3	7.7	-6.7
	CWLEP AVERAGE	**50.0**	**0.5**	**-2.0**	**1.0**	**-3.8**
	Birmingham	61	7	0	13.0	0.0
	Solihull	46	5	-4	12.2	-8.0

Greater Birmingham and Solihull	Staffordshire	52	12	8	30.0	18.2
	Worcestershire	45	14	0	45.2	0.0
	GBSLEP AVERAGE	51.0	9.5	1.0	22.9	2.0
	WMCA AVERAGE	40.2	4.2	-0.1	11.7	-0.2

Best and worst performing LAs

Most sites in PCM 2017 (top 5)	% in PCM	Least sites in PCM 2017 (bottom 5)	% in PCM
1. Birmingham	61	1. Wolverhampton	20
2. Coventry	58	2. Dudley	21
3. Staffordshire	52	3. Walsall	23
4. Solihull	46	4. Sandwell	34
5. Worcestershire	45	5. Warwickshire	42

Best progress since 2010 (top 5)	Change in % PCM	Poorest progress since 2010 (bottom 5)	Change in % PCM
1. Worcestershire	+14	1. Coventry	-2
2. Staffordshire	+12	2. Walsall	-1
3. Birmingham	+7	3= Wolverhampton	0
4. Solihull	+5	3= Dudley	0
5. Sandwell	+4	5. Warwickshire	+3

3.6   Environment: Water quality (NEW)

As outlined in section 2, data reflecting water quality could not be obtained for all CAs within the timescales of this report. However, the below represents a snapshot of the water quality in the WMCA in the two years 2015 and 2016 (see annex for methodology).

Water quality indicator (as given in 'latest figure' column in table below):

0 – 1.49	1.5 – 2.49	2.5 – 3.49	3.5 – 4.49	4.5 – 5
Bad / fail	Poor / moderate or less	Moderate or Does Not Support Good	Good or Supports Good	High

In other words, the higher the number the better the water quality.

River basin area	Location			Latest figure (2016)	Change 2015-2016
	Management catchment	Operational catchment	Local authorities covered		
Severn	Avon Warwickshire	Avon Rural Rivers and Lakes	Central and south Warwickshire	3.89	+0.03
		Avon Urban Rivers and Lakes	Coventry, north Warwickshire and Redditch	3.82	+0.01
	Severn Middle Worcestershire	Stour Upper Worcestershire Rivers and Lakes	Wolverhampton and west Black Country	3.75	+0.05
Humber	Tame Anker and Mease	Blythe Rivers	East Birmingham and west Coventry	3.76	+0.05

	Tame Lower Rivers and Lakes	East Black Country	3.72	+0.05
	Tame Upper Rivers	South Black Country, Birmingham, Solihull, Lichfield and Tamworth	3.25	+0.09
		WMCA AVERAGE	**3.78**	**+0.03**

Given the limited analysis time and the different geographical boundaries of the data, ranking of local authorities is not possible for this metric.

3.7 Environment: Flood risk (NEW)

As outlined in section 2, data reflecting flood risk could not be obtained for all CAs within the timescales of this report. However, the below represents a snapshot of the flood risk in most of the WMCA (see annex for methodology). It is unclear which year this represents.

		No. properties at >1% risk of flooding per year		
LEP	**Local authority**	**Fluvial flooding**	**Pluvial flooding**	**Total**
Black Country	Dudley	1,130	11,280	12,410
	Sandwell	1,950	7,520	9,470
	Walsall	2,060	9,550	11,610
	Wolverhampton	1,940	10,080	12,020
Coventry & Warwickshire	Coventry	1,060	13,910	14,970
Greater Birmingham & Solihull	Birmingham	9,660	30,720	40,380
	Solihull	1,270	6,820	8,090
WMCA TOTAL		**19,070**	**89,880**	**108,950**

3.8 Social: Health inequality

Female health inequality: trends

		Latest figure	Change / years		% Change	
LEP	**Local authority**	**years (2016)**	**2010 & 11-2016**	**2015-2016**	**2010 & 11-2016**	**2015-2016**
Black Country	**Dudley**	7.6	1.9	0.3	33.3	4.1
	Sandwell	7.0	0.6	0.4	9.4	6.1
	Walsall	7.4	0.5	1.0	7.2	15.6
	Wolverhampton	7.0	1.2	-0.4	20.7	-5.4
	BCLEP AVERAGE	**7.3**	**1.1**	**0.3**	**16.9**	**4.7**
Coventry & Warwickshire	**Coventry**	10.2	2.3	0.6	29.1	6.3
	North Warwickshire	2.3	-1.5	1.8	-39.5	360.0
	Nuneaton and Bedworth	6.3	-1.1	-0.4	-14.9	-6.0
	Rugby	5.9	-2.4	1.0	-28.9	20.4
	Stratford-on-Avon	4.7	0.2	0.0	4.4	0.0

	Warwick	2.9	-4.0	-3.1	-58.0	-51.7
	CWLEP AVERAGE	**5.4**	**-1.1**	**-0.0**	**-16.8**	**-0.3**
Greater Birmingham and Solihull	**Birmingham**	6.6	0.7	0.0	11.9	0.0
	Bromsgrove	5.5	2.0	1.7	57.1	44.7
	Cannock Chase	5.5	3.0	0.4	120.0	7.8
	East Staffordshire	7.0	-0.1	0.4	-1.4	6.1
	Lichfield	6.8	-0.4	-0.5	-5.6	-6.8
	Redditch	9.0	-0.4	2.1	-4.3	30.4
	Solihull	11.1	0.8	0.0	7.8	0.0
	Tamworth	8.2	2.6	-0.8	46.4	-8.9
	Wyre Forest	7.6	-0.9	-0.9	-10.6	-10.6
	GBSLEP AVERAGE	**7.5**	**0.8**	**0.3**	**12.2**	**3.7**
	WMCA AVERAGE	**6.7**	**0.1**	**0.1**	**2.0**	**2.2**

Female health inequality: Best and worst performing LAs

Smallest female health inequality gap 2016 (top 5)	Years	Largest female health inequality gap 2016 (bottom 5)	Years
1. North Warwickshire	2.3	1. Solihull	11.1
2. Warwick	2.9	2. Coventry	10.2
3. Stratford-on-Avon	4.7	3. Redditch	9.0
4= Bromsgrove	5.5	4. Tamworth	8.2
4= Cannock Chase	5.5	5= Dudley	7.6
		5= Wyre Forest	7.6

Best progress since 2010 & 11 (top 5)	Change / years	Poorest progress since 2010 & 11 (bottom 5)	Change / years
1. Warwick	-4.0	1. Cannock Chase	+3.0
2. Rugby	-2.4	2. Tamworth	+2.6
3. North Warwickshire	-1.5	3. Coventry	+2.3
4. Nuneaton & Bedworth	-1.1	4. Bromsgrove	+2.0
5. Wyre Forest	-0.9	5. Dudley	+1.9

Male health inequality: trends

		Latest figure	Change / years		% Change	
LEP	**Local authority**	**years (2016)**	**2010 & 11-2016**	**2015-2016**	**2010 & 11-2016**	**2015-2016**
Black Country	**Dudley**	9.0	-0.9	-0.6	-9.1	-6.3
	Sandwell	6.8	-2.8	0.0	-29.2	0.0
	Walsall	11.3	0.5	0.8	4.6	7.6
	Wolverhampton	7.3	-2.4	-0.7	-24.7	-8.8
	BCLEP AVERAGE	**8.6**	**-1.4**	**-0.1**	**-14.0**	**-1.4**
Coventry & Warwickshire	**Coventry**	10.6	-1.1	1.2	-9.4	12.8
	North Warwickshire	5.1	-1.2	2.4	-19.0	88.9

LEP	Local authority	Latest figure years (2016)	Change / years		% Change	
			2010 & 11-2016	2015-2016	2010 & 11-2016	2015-2016
	Nuneaton and Bedworth	7.4	-3.3	0.0	-30.8	0.0
	Rugby	7.3	-1.5	1.8	-17.0	32.7
	Stratford-on-Avon	3.7	0.2	1.0	5.7	37.0
	Warwick	8.6	0.8	0.0	10.3	0.0
	CWLEP AVERAGE	**7.1**	**-1.0**	**1.1**	**-12.5**	**17.6**
Greater Birmingham and Solihull	Birmingham	8.9	-1.9	0.3	-17.6	3.5
	Bromsgrove	8.8	2.5	1.6	39.7	22.2
	Cannock Chase	7.7	1.0	-1.2	14.9	-13.5
	East Staffordshire	8.4	-1.5	0.1	-15.2	1.2
	Lichfield	9.5	2.4	1.7	33.8	21.8
	Redditch	9.3	0.6	1.0	6.9	12.0
	Solihull	12.8	2.0	1.4	18.5	12.3
	Tamworth	6.4	-3.4	0.5	-34.7	8.5
	Wyre Forest	8.2	0.4	-1.2	5.1	-12.8
	GBSLEP AVERAGE	**8.9**	**0.2**	**0.5**	**2.7**	**5.5**
	WMCA AVERAGE	**8.3**	**-0.5**	**0.5**	**-5.8**	**6.9**

Male health inequality: Best and worst performing LAs

Smallest male health inequality gap 2016 (top 5)	Years	Largest male health inequality gap 2016 (bottom 5)	Years
1. Stratford-on-Avon	3.7	1. Solihull	12.8
2. North Warwickshire	5.1	2. Walsall	11.3
3. Tamworth	6.4	3. Coventry	10.6
4. Sandwell	6.8	4. Lichfield	9.5
5= Rugby	7.3	5. Redditch	9.3
5= Wolverhampton	7.3		

Best progress since 2010 & 11 (top 5)	Change / years	Poorest progress since 2010 & 11 (bottom 5)	Change / years
1. Tamworth	-3.4	1. Bromsgrove	+2.5
2. Nuneaton & Bedworth	-3.3	2. Lichfield	+2.4
3. Sandwell	-2.8	3. Solihull	+2.0
4. Wolverhampton	-2.4	4. Cannock Chase	+1.0
5. Birmingham	-1.9	5. Warwick	+0.8

3.9 Social: Fraction of mortality attributable to particulate air pollution (MPP) (NEW)

Trends

LEP	Local authority	Latest figure % of MPP (2017)	Change / % of MPP		% Change	
			2011-2017	2016-2017	2011-2017	2016-2017
Black Country	**Dudley**	5.0	-0.3	-0.6	-5.7	-10.7
	Sandwell	5.7	-0.5	-0.6	-8.1	-9.5
	Walsall	5.5	-0.5	-0.6	-8.3	-9.8
	Wolverhampton	4.9	-0.5	-0.7	-9.3	-12.5
	BCLEP AVERAGE	**5.3**	**-0.4**	**-0.6**	**-7.9**	**-10.6**
Coventry & Warwickshire	**Coventry**	5.5	-0.3	-0.6	-5.2	-9.8
	North Warwickshire	5.2	-0.3	-0.5	-5.5	-8.8
	Nuneaton and Bedworth	5.3	-0.2	-0.6	-3.6	-10.2
	Rugby	5.0	-0.2	-0.5	-3.8	-9.1
	Stratford-on-Avon	4.7	-0.2	-0.3	-4.1	-6.0
	Warwick	5.0	-0.3	-0.4	-5.7	-7.4
	CWLEP AVERAGE	**5.1**	**-0.3**	**-0.5**	**-4.7**	**-8.6**
Greater Birmingham and Solihull	**Birmingham**	5.6	-0.3	-0.6	-5.1	-9.7
	Bromsgrove	4.7	-0.4	-0.5	-7.8	-9.6
	Cannock Chase	4.7	-0.3	-0.7	-6.0	-13.0
	East Staffordshire	5.0	0.1	-0.6	2.0	-10.7
	Lichfield	4.9	-0.2	-0.6	-3.9	-10.9
	Redditch	4.6	-0.4	-0.5	-8.0	-9.8
	Solihull	5.4	-0.2	-0.5	-3.6	-8.5
	Tamworth	5.3	-0.1	-0.7	-1.9	-11.7
	Wyre Forest	4.3	-0.3	-0.4	-6.5	-8.5
	GBSLEP AVERAGE	**4.9**	**-0.2**	**-0.6**	**-4.5**	**-10.3**
	WMCA AVERAGE	**5.1**	**-0.3**	**-0.6**	**-5.5**	**-10.2**

Best and worst performing LAs

Lowest MPP 2017 (top 5)	% of MPP	Highest MPP 2017 (bottom 5)	% of MPP
1. Wyre Forest	4.3	1. Sandwell	5.7
2. Redditch	4.6	2. Birmingham	5.6
3= Bromsgrove	4.7	3= Coventry	5.5
3= Cannock Chase	4.7	3= Walsall	5.5
3= Stratford-on-Avon	4.7	5. Solihull	5.4

Best progress since 2011 (top 5)	Change in % of MPP	Poorest progress since 2011 (bottom 5)	Change in % of MPP
1= Sandwell	-0.5	1. East Staffordshire	+0.1
1= Walsall	-0.5	2. Tamworth	-0.1

1= Wolverhampton	-0.5	3= Lichfield	-0.2
4= Bromsgrove	-0.4	3= Nuneaton & Bedworth	-0.2
4= Redditch	-0.4	3= Rugby	-0.2
		3= Solihull	-0.2
		3= Stratford-on-Avon	-0.2

3.10 Social: Fuel Poverty (FP)

Trends

| LEP | Local authority | Latest figure % in FP (2016) | Change / % in FP | | % Change | |
			2011-2016	2015-2016	2011-2016	2015-2016
Black Country	**Dudley**	13.3	0.5	1.5	3.9	12.7
	Sandwell	16.9	2.9	2.6	20.7	18.2
	Walsall	14.4	1.3	1.2	9.9	9.1
	Wolverhampton	15.2	0.4	0.6	2.7	4.1
	BCLEP AVERAGE	**15.0**	**1.3**	**1.5**	**9.3**	**10.9**
Coventry & Warwickshire	**Coventry**	15.3	-0.4	0.9	-2.5	6.3
	North Warwickshire	11.2	-1.2	-0.7	-9.7	-5.9
	Nuneaton and Bedworth	12.0	-0.9	0.7	-7.0	6.2
	Rugby	11.1	-2.8	-0.7	-20.1	-5.9
	Stratford-on-Avon	10.5	-2.4	-3.1	-18.6	-22.8
	Warwick	10.8	-2.0	-1.5	-15.6	-12.2
	CWLEP AVERAGE	**11.8**	**-1.6**	**-0.7**	**-12.0**	**-5.8**
Greater Birmingham and Solihull	**Birmingham**	16.8	1.3	1.2	8.4	7.7
	Bromsgrove	10.0	-2.6	-0.6	-20.6	-5.7
	Cannock Chase	12.5	0.7	2.0	5.9	19.0
	East Staffordshire	14.0	-0.7	0.2	-4.8	1.4
	Lichfield	10.8	-1.1	-0.2	-9.2	-1.8
	Redditch	10.6	0.8	0.1	8.2	1.0
	Solihull	9.8	-1.8	-0.8	-15.5	-7.5
	Tamworth	11.1	1.1	0.3	11.0	2.8
	Wyre Forest	12.5	-1.4	-0.1	-10.1	-0.8
	GBSLEP AVERAGE	**12.0**	**-0.4**	**0.2**	**-3.3**	**2.0**
WMCA AVERAGE		**12.6**	**-0.4**	**0.2**	**-3.4**	**1.5**

Best and worst performing LAs

Least % of households in FP 2016 (top 5)	% in FP	Most % of households in FP 2016 (bottom 5)	% in FP
1. Solihull	9.8	1. Sandwell	16.9
2. Bromsgrove	10.0	2. Birmingham	16.8
3. Stratford-on-Avon	10.5	3. Coventry	15.3
4. Redditch	10.6	4. Wolverhampton	15.2
5= Lichfield	10.8	5. Walsall	14.4
5= Warwick	10.8		

Best progress since 2011 (top 5)	Change in % in FP	Poorest progress since 2011 (bottom 5)	Change in % in FP
1. Rugby	-2.8	1. Sandwell	+2.9
2. Bromsgrove	-2.6	2= Birmingham	+1.3
3. Stratford-on-Avon	-2.4	2= Walsall	+1.3
4. Warwick	-2.0	4. Tamworth	+1.1
5. Solihull	-1.8	5. Redditch	+0.8

3.11 Economic: Productivity

Total economic productivity: trends

Economic productivity metrics are broken down into NUTS levels (see annex) meaning that data are not collected at district level.

LEP	Local authority	Latest figure GVA £m (2017)	Change / £m GVA		% Change	
			2010-2017	2016-2017	2010-2017	2016-2017
Black Country	Dudley	5,441	977	233	21.9	4.5
	Sandwell	6,248	1,288	125	26.0	2.0
	Walsall	5,218	1,368	218	35.5	4.4
	Wolverhampton	4,944	585	234	13.4	5.0
	BCLEP AVERAGE	5,463	1,054.5	202.5	23.9	3.8
Coventry & Warwickshire	Coventry	8,824	2,770	280	45.8	3.3
	Warwickshire	17,353	977	233	21.9	4.5
	CWLEP AVERAGE	13,089	4,041.0	433.5	44.7	3.4
Greater Birmingham and Solihull	Birmingham	28,156	7,184	836	34.3	3.1
	Solihull	7,710	2,679	192	53.2	2.6
	GBSLEP AVERAGE	17,933	4,931.5	514.0	37.9	3.0
	WMCA AVERAGE	10,487	2,770.4	338.1	35.9	3.3

Total economic productivity: Best and worst performing LAs

Greatest economic productivity 2017 (top 4)	£m GVA	Lowest economic productivity 2017 (bottom 4)	£m GVA
1. Birmingham	28,156	1. Wolverhampton	4,944
2. Warwickshire	17,353	2. Walsall	5,218
3. Coventry	8,824	3. Dudley	5,441
4. Solihull	7,710	4. Sandwell	6,248

Best progress since 2010 (top 4)	% change	Poorest progress since 2010 (bottom 4)	% change
1. Solihull	+53.2	1. Wolverhampton	+13.4
2. Coventry	+45.8	2= Dudley	+21.9
3. Walsall	+35.5	2= Warwickshire	+21.9
4. Birmingham	+34.3	4. Sandwell	+26.0

Per capita economic productivity: trends

LEP	Local authority	Latest figure GVA £ (2017)	Change / £ GVA		% Change	
			2010-2017	2016-2017	2010-2017	2016-2017
Black Country	**Dudley**	17,033	2,735	634	19.1	3.9
	Sandwell	19,198	2,998	218	18.5	1.1
	Walsall	18,551	4,124	621	28.6	3.5
	Wolverhampton	19,021	1,418	766	8.1	4.2
	BCLEP AVERAGE	**18,451**	**2,818.8**	**559.8**	**18.0**	**3.1**
Coventry & Warwickshire	**Coventry**	24,500	5,075	312	26.1	1.3
	Warwickshire	30,738	8,611	744	38.9	2.5
	CWLEP AVERAGE	**27,619**	**6,843.0**	**528.0**	**32.9**	**1.9**
Greater Birmingham and Solihull	**Birmingham**	24,761	4,996	543	25.3	2.2
	Solihull	36,042	11,658	607	47.8	1.7
	GBSLEP AVERAGE	**30,402**	**8,327.0**	**575.0**	**37.7**	**1.9**
	WMCA AVERAGE	**23,731**	**5,201.9**	**555.6**	**28.1**	**2.4**

Per capita economic productivity: Best and worst performing LAs

Greatest per capita economic productivity 2017 (top 4)	£m GVA	Lowest per capita economic productivity 2017 (bottom 4)	£m GVA
1. Solihull	36,042	1. Dudley	17,033
2. Warwickshire	30,738	2. Walsall	18,551
3. Birmingham	24,761	3. Wolverhampton	19,021
4. Coventry	24,500	4. Sandwell	19,198

Best progress since 2010 (top 4)	% change	Poorest progress since 2010 (bottom 4)	% change
1. Solihull	+47.8	1. Wolverhampton	+8.1
2. Warwickshire	+38.9	2. Sandwell	+18.5
3. Walsall	+28.6	3. Dudley	+19.1
4. Coventry	+26.1	4. Birmingham	+25.3

3.12 Economic: Emissions Intensity Ratio (EIR) (NEW)

Economic productivity metrics are broken down into NUTS levels meaning that data are not collected at district level. Carbon emissions data used to inform this metric were, therefore, required to be manipulated into NUTS boundaries (see annex).

LEP	Local authority	Latest figure tCO$_2$/£m GVA (2016)	Change / tCO$_2$/£m GVA		% Change	
			2010-2016	2015-2016	2010-2016	2015-2016
Black Country	**Dudley**	234.1	-130.9	-20.1	-35.9	-7.9
	Sandwell	239.7	-147.0	-34.8	-38.0	-12.7
	Walsall	224.9	-150.1	-22.6	-40.0	-9.1
	Wolverhampton	214.1	-95.4	-20.7	-30.8	-8.8
	BCLEP AVERAGE	**228.2**	**-130.8**	**-24.6**	**-36.4**	**-9.7**
Coventry & Warwickshire	**Coventry**	162.3	-132.5	-16.4	-44.9	-9.2
	Warwickshire	327.5	-190.2	-8.2	-36.7	-2.4
	CWLEP AVERAGE	**244.9**	**-161.4**	**-12.3**	**-39.7**	**-4.8**
Greater Birmingham and Solihull	**Birmingham**	163.3	-120.9	-22.7	-42.5	-12.2
	Solihull	176.5	-132.5	-25.1	-42.9	-12.4
	GBSLEP AVERAGE	**169.9**	**-126.7**	**-23.9**	**-42.7**	**-12.3**
	WMCA AVERAGE	**217.8**	**-137.4**	**-21.3**	**-38.7**	**-8.9**

Total economic productivity: Best and worst performing LAs

Smallest EIR 2016 (top 4)	tCO$_2$/£m GVA	Greatest EIR 2016 (bottom 4)	tCO$_2$/£m GVA
1. Coventry	162.3	1. Warwickshire	327.5
2. Birmingham	163.3	2. Sandwell	239.7
3. Solihull	176.5	3. Dudley	234.1
4. Wolverhampton	214.1	4. Walsall	224.9

Best progress since 2010 (top 4)	% change	Poorest progress since 2010 (bottom 4)	% change
1. Coventry	-44.9	1. Wolverhampton	-30.8
2. Solihull	-42.9	2. Dudley	-35.9
3. Birmingham	-42.5	3. Warwickshire	-36.7
4. Walsall	-40.0	4. Sandwell	-38.0

3.13 Summary and local recommendations

Environment
- There is greatest potential to support Rugby with reducing its high per capita carbon emissions by reversing the declining amount of energy generated by renewables. This could be expanded to North Warwickshire, if appropriate, albeit the latter already generates a good amount of energy from renewable sources.
- Birmingham emits the greatest amount of total carbon, emphasising the potential that implementing large-scale renewable energy or energy efficiency schemes could have here.

- Good practice should be sought from Sandwell as to how the area has increased its renewable energy generation by 808% in four years.
- There is complexity around non-household waste recycling, as some local authorities have recycled none and one has recycled more than 100% of waste. A clearer indication of how these processes take place and sharing good practice between authorities is recommended.
- There is potential to implement greater consistency across the WMCA with respect to the amount of household waste recycled. A swing of 40 percentage points between the worst and best authorities is very large. Birmingham should be top priority, as the district containing the largest population only recycles 21% of its waste and this has dropped by 10 percentage points since 2010.
- Subject to improvements in data through mandatory collation and resourcing, top performing authorities with respect to positive conservation management should share good practice with poorer authorities. As with household recycling, there are 40 percentage points' difference between the best and worst performing authorities.
- Next year, it is important to obtain data reflecting water quality and flood risk across all combined authorities so that true comparisons can be made and good practice shared, if necessary.
- As figures in 2016 show, there remain many water courses registering as having poor water quality in the West Midlands and, by analysing the raw data, analysis should be carried out to determine why some water courses are of high quality and why some are poor, and replicate any measures implemented in high quality areas in poorer quality areas.
- There are also many properties at risk of flooding. Especially with predicted climate changes in mind, a detailed analysis of how flooding can affect economic growth and residents in the WMCA ought to be considered, along with the implications of other climate extremes, such as heatwaves.

Social
- WMCA health-related initiatives should scope in advance how they can contribute to reducing the health inequality gap across the area, with particular attention paid to Solihull and Coventry. It would also be beneficial to determine the core reasons for the large gap in these areas.
- Similarly, WMCA could support the relevant authorities to ascertain and tackle the reasons for health inequality increases in recent years, especially in areas such as Solihull, Bromsgrove and Cannock Chase.
- The new Clean Air Zone to be implemented in Birmingham this year is encouraging given that 5.6% of the population die as a consequence of exposure to just one of the causes of poor air quality (PM 2.5). Should the scheme be successful, similar initiatives should be considered for other parts of the region, especially the Black Country and Coventry given similarly high statistics.
- A scheme to support poor householders with heating their homes and making efficiency improvements should be rolled out to those areas that need it the most, especially the larger conurbations within the WMCA. The Energy Capital programme has the potential to lead on this type of activity.

Economic
- Strong economic performance in the WMCA area remains a positive news story. The next step is to ensure that this is not detrimental to making progress in the environmental and social challenges facing the region.

4 Recommendations for the West Midlands Combined Authority

4.1 New metrics should be embedded into its reporting mechanisms

Whilst it is encouraging that the WMCA Environment Board has stated that the majority of the metrics presented in previous iterations of this report are a priority, at present, the metrics of renewable electricity, recycling, mortality rates as a result of air pollution, sites in positive conservation management, flood risk, water quality and fuel poverty are not reported on by the WMCA. The data underpinning these metrics show significant room for improvement when compared to other CA areas – the West Midlands is ranked no higher than fifth on any of them in the latest available year of data – and so to ensure the WMCA becomes 'best in class' in overall sustainability, these metrics should be monitored to ensure that actions can be taken to improve them. All these metrics should, therefore, be embedded or linked to headline indicators in the Performance Management Framework (PMF).

Key projects and programmes that have been partly or wholly established to address improvements to one or more of the metrics used in this report should ensure that their impact is being measured and monitored to determine success.

Responsibility: WMCA should lead on this integration process as part of any forthcoming update to the PMF.

Next step: To be discussed at a future Environment Board meeting.

4.2 Targets should be set for all metrics

In line with the above, the WMCA currently does not have targets related to any of the new metrics included in this report.

A draft set of targets was developed by the Environment Advisory and Delivery Board based on good practice in other CAs and proposed to the Environment Board in February 2018. However the Board recommended that instead of 'hard' targets there should be the aspiration of being 'best in class.' This is commended, however one must consider the challenges that WMCA has and its unique circumstances that makes this extremely difficult to achieve; for example, it is always likely to emit more carbon emissions in absolute terms than other CAs due to various factors, including its geographic and population size.

Therefore, targets should be established to make monitoring easier and to ensure actions are delivered to address them. They should fit with the existing targets around carbon emissions, economic productivity and air quality, for example by setting the same baseline and timeframes where possible. Again, these should then be embedded into the PMF.

Responsibility: WMCA should have overall responsibility to put together new targets and integrate these into the PMF, however SWM can support with the establishment of these targets. Now is an excellent time to do this given the current refresh of SWM's Roadmap,[14] which itself will include a fresh set of sustainability targets for the West Midlands region as a whole. The WMCA can use this as a starting point.

Next step: SWM is meeting WMCA Head of Environment to discuss in early June 2019.

4.3 Establish flood risk metric and take action on climate change adaptation

With an increasingly clear narrative around the likely impacts of climate change on the economy and society, the WMCA should prioritise ensuring that services, businesses and residents in the area are fully adapted to the impacts of climate change, be it flooding, storms or overheating. A starting point would be to obtain flood risk data for all combined authorities to determine progress and how this has changed over time, something which could not be obtained within the timescales of this year's report. There should then be a push to work with organisations such as the UK Town Planning Institute, UK Green Buildings Council, SWM and others to embed climate resilience into decision making.

Responsibility: WMCA, with support from SWM and EA, to obtain full flood risk data. SWM to be considered by WMCA to enable brokerage between key partners to further develop work on adaptation.

Next step: Continued liaison with EA regarding flood risk data. Wider adaptation issue to be discussed at future Environment Board meeting.

4.4 Natural environment metrics need to be established/improved

At present, data reflecting progress around the state of the natural environment and natural capital are very difficult to come by and are currently inadequate. To be best in class, the WMCA should work with the WMCA Environment Board to implement a target that can help to monitor where improvements in the natural environment are required and how natural capital can be embedded across the WMCA to help achieve sustainability outcomes. At the very least, one of the natural environment based metrics used in this report, sites in positive conservation management, should be made mandatory at the local level and reported on by all local authorities in the WMCA area each year.

Water quality data, partly obtained for this report, should be included in greater detail for all combined authorities when this exercise is repeated next year. This would go part way to providing a solution to the above recommendation.

Responsibility: WMCA should liaise with Environment Advisory and Delivery Group Board members the Environment Agency and Birmingham and Black Country Wildlife Trust, along

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[14] https://www.sustainabilitywestmidlands.org.uk/priorities/

with any other key partners, to determine further natural environment metrics that may be obtainable and useful and to ensure water quality data can be fully obtained for next year.

Next step: To be discussed at future Environment Advisory and Delivery Group meeting.

4.5   Investigate establishing a Low Carbon Business Growth metric

One remaining gap in the metrics analysed is that of low carbon business growth and the strengths of the Low Carbon and Environmental Goods and Services (LCEGS) sector in the region. It transpires that data reflecting the strengths of the LCEGS sector used to be collated nationally but this ceased a few years ago. Analysing this metric could help to strengthen the area's economy by aligning activities to improve economic growth whilst at the same time reducing carbon emissions – both of which contribute to existing WMCA targets. The WMCA should investigate whether it can monitor LCEGS locally. It is understood that a new green business growth target is being considered for implementation from November 2019, but no further details have been provided to date.

Responsibility: WMCA should liaise with appropriate Environment Advisory and Delivery Group members, along with any other key partners, such as LEPs, to determine what metrics may already exist that makes monitoring the strength of the LCEGS sector a simple task.

Next step: To be discussed at future Environment Advisory and Delivery Group meeting.

4.6   Clear accountability and integrated working

The Mayor and WMCA Board, although collectively responsible for the performance of the WMCA, should be clearly responsible for specific PMF objectives and indicators that closely align to their delegated areas of responsibility. There is likely to be some clear environmental indicators taken from the PMF monitoring included in the forthcoming Annual Plan which will be linked to the Environment Portfolio holder's role. This will also be incorporated into the WMCA's project system, however due to an improvement review this has yet to be implemented.

Moreover, other portfolio holders should have ownership of other relevant targets and liaise with each other to check that projects that are being commissioned under their portfolio theme address some or all the metrics/targets.

Responsibility: WMCA project system improvements provide the opportunity to include better accountability on environmental metrics.

Next step: WMCA Environment team to liaise with project system team.

4.7 Clear annual reporting

At the time of writing the WMCA 2017/18 annual review and forward plan had been published, but only contained selective PMF indicators. In the future to help accountability and transparency, a consistent full set of PMF indicators should be published annually with commentary and links to the relevant WMCA portfolio holder. The next annual review is due for publication later in June 2019 at the WMCA AGM, at which point it can be determined whether this has happened.

Next step: Determine if the above recommendation has been included in the new annual review.

Responsibility: WMCA

4.8 More action required on many metrics

Projects are already underway that deal with specific aspects of air quality and health inequality, such as the WMCA's Mental Health Commission[15] and the Low Emissions Bus Strategy[16] respectively. Recent success in some of these issues have been achieved, such as Transport for West Midlands and Coventry City Council who have both received funding from the government to implement low emission buses into their fleets[17] and the WMCA's support to the new WM-Air[18] programme based out of the University of Birmingham.

However, given that the West Midlands performs below average on metrics including fuel poverty, recycling, natural environment, renewable electricity generation and health inequality, further activities still need to be undertaken to ensure that an improvement in these metrics can be realised.

Responsibility: WMCA Environment Advisory and Delivery Group to look at activities that can help to deliver projects that address poorer performing metrics.

Next step: For discussion at future Environment Board meeting.

4.9 Addressed recommendations

Last year's recommendations that have been addressed are:

Investigate improvements to air quality data

As presented in this report, a new metric which analyses the mortality impacts of air pollution (specifically PM2.5 emissions) is now included. The data used to present this

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[15] https://www.wmca.org.uk/what-we-do/mental-health-commission/
[16] http://bit.ly/2tuKfVo
[17] http://www.sustainabilitywestmidlands.org.uk/news/improving-air-quality-within-the-bus-industry/
[18] https://www.birmingham.ac.uk/schools/gees/research/projects/wm-air/index.aspx

metric are more granular than those used in the existing metric reflecting air pollution levels and is therefore a more useful way of monitoring how many people in the WMCA are affected by air quality. In addition, both SWM and the WMCA have convened discussions with the newly established WM Air team based out of the University of Birmingham. Part of their activity involves establishing new ways of monitoring air quality which may be useful in years to come.

Resource to drive reporting of metrics into the WMCA project systems

The WMCA has now appointed a Head of Environment post. Part of this role is to ensure that the metrics presented in this report can be reported and embedded into WMCA systems. This is reflected in the identification by the Environment Board to establish the majority of these metrics as a priority going forward. The next step is to establish targets and implement activities aimed to address poorer performance, as outlined above.

Consistency of data and presentation

Previously, some of the data used to form targets in the WMCA SEP and PMF and the WMCA update of the PMF were not consistent. To address this, the WMCA environment team has worked with the Environment Advisory and Delivery Group to agree a core set of indicators linked to the PMF or Environment Board responsibilities, which the Environment Board agreed in February 2018. This fed into the brief for the WMCA's latest annual monitoring by SWM, the annual state of the region report and the WMCA annual plan.

It should be noted that, despite there still being much work to do, as a result of addressing the above recommendations and due to the support of the WMCA and the work of local partners, the WMCA area is beginning to show an overall improvement in a range of areas. Compared to last year's equivalent report, the WMCA has moved up from sixth to fourth in its overall progress since 2010 compared to other Combined Authorities areas.

Future improvements

If you have any comments and suggestions for future improvements, please send them to enquiries@swm.org.uk before April 2020. Then, resources permitting, we will seek to review them and incorporate any improvements and clarifications into the fourth annual monitoring report.

Annex – Methodology

This annex outlines in detail the methodology used by SWM to generate the results conveyed in the main body of this report.

The WMCA has measured and embedded four key aspects of sustainability as part of its operations and programmes: carbon emissions, health inequality, air quality and economic productivity across the whole geography. The targets are:
- 40% reduction in absolute carbon emissions from 2010 to 2030
- Reduction in the number of days EU air quality standards are breached to one day by 2030
- Reduction in average male health inequality gap by 5.9 years by 2030
- Reduction in average female health inequality gap by 3.9 years by 2030
- £33,604 per capita GVA by 2030

The Environment Board has recently established additional priorities partly based on recommendations of the previous iterations of these reports. These are:
- Renewable energy generated
- Recycling of household and non-household waste
- Sites under positive conservation management
- Improvements to water quality
- Management of flood risk
- Reducing the number of homes in fuel poverty
- Increase total GVA
- Closer analysis of the amount of carbon emitted per £ million GVA.

In order to ascertain how it is performing against these metrics, it is useful to compare trends with the eight other combined authority areas in formation. It may then be possible to ascertain reasons why the WMCA region is performing well or poorly in comparison to other CA areas and whether its targets and projects to address these metrics need to be more ambitious.

Much of the data that reflects the below metrics are broken down into local authority area. It was therefore necessary to ascertain which local authorities each combined authority area encompasses, as determined by searching the relevant combined authority website. They are as follows:

Combined authority	Local authority area
Cambridge & Peterborough	Cambridge
	East Cambridgeshire
	Fenland
	Huntingdonshire
	Peterborough
	South Cambridgeshire
Greater Manchester	Bolton
	Bury

	Manchester
	Oldham
	Rochdale
	Salford
	Stockport
	Tameside
	Trafford
	Wigan
Liverpool City Region	Halton
	Knowsley
	Liverpool
	Sefton
	St Helens
	Wirral
North East	County Durham
	Gateshead
	Newcastle
	North Tyneside
	Northumberland
	South Tyneside
	Sunderland
Sheffield City Region	Barnsley
	Bassetlaw
	Bolsover
	Chesterfield
	Derbyshire Dales
	Doncaster
	North East Derbyshire
	Rotherham
	Sheffield
Tees Valley	Darlington
	Hartlepool
	Middlesbrough
	Redcar & Cleveland
	Stockton
West of England	Bath & North East Somerset
	Bristol
	South Gloucestershire
West Yorkshire	Bradford
	Calderdale
	Craven
	Harrogate

	Kirklees
	Leeds
	Selby
	Wakefield
	York
West Midlands	Birmingham
	Bromsgrove
	Cannock Chase
	Coventry
	Dudley
	East Staffordshire
	Lichfield
	Redditch
	Sandwell
	Solihull
	Tamworth
	Walsall
	Warwickshire
	Wolverhampton
	Wyre Forest

In late 2018, the number of CAs became nine with the North East CA splitting into North East CA and North Tyne CA. The latter went onto have an elected Mayor in 2019. For the purposes of this report and to enable comparisons between years we have kept the North East CA as one unit. We will review this approach in future monitoring reports.

Environment: Carbon emissions

> **WMCA target:** Reduce carbon emissions region-wide by 40% by 2030 from a 2010 baseline.

The central government Department for Business, Energy and Industrial Strategy (BEIS) publishes nationwide carbon emissions for each local authority area every year, two and a half years in arrears.[19] Data is given in kilotons of CO_2. Given that the WMCA uses a 2010 baseline when setting its target, the emissions data from 2010 to 2016 (the latest available data at the time of analysis) was interrogated to determine levels of carbon emissions in all nine combined authority areas dating back to the same year.

Carbon emissions data are given by local authority, therefore data for each of the 70 local authority areas that make up the nine combined authorities were analysed between 2010 and 2016 inclusive to determine the actual change in emissions and to draw comparisons

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[19] https://bit.ly/2R7mEoO

between each combined authority. To gain insight into annual changes, the change between 2015 and 2016 (latest available) was calculated for all 70 local authority areas. This was represented as a percentage change using the formula =((2016-2010)/2010)*100 (substitute 2010 with 2015 for annual change).

Per capita emissions, also provided by BEIS, measure emissions per person in a given local authority, to factor in population density. One would expect that the higher the population the higher the emissions, which is why comparing absolute emissions between one densely populated area and one sparsely populated area would not be too helpful. It was deemed relevant, therefore, to also analyse per capita emissions to determine which areas are emitting more or less emissions per person than would be expected. This figure is a more credible one to use when comparing combined authority emissions as it factors out this population issue.

Environment: Air quality

> **WMCA target:** Reduce the number of days of high air pollution to only one day per year by 2030.

To determine levels of air quality in a given area, the Daily Air Quality Index (DAQI) produced by Defra was analysed.[20] This measures the severity of air pollution each day in the UK on a 1-10 scale, whereby 1 is very low and 10 is very high. The scale includes five different types of pollutant, rather than just one type.[21] When levels reach four (moderate) or higher, this is deemed as breaching various air quality related standards. It is also the point where Defra suggests that people may start being affected by the effects of air pollution, e.g. people with lung conditions start experiencing symptoms.[22] As such, we have analysed the number of times each area has registered a four or higher on the DAQI scale.

The main challenge, in terms of obtaining useful information, is the way that the DAQI data are measured geographically when compared to the combined authority boundaries. Defra measures DAQ by region and also in some 'agglomeration zones.' These are usually heavily urbanised zones where air quality is likely to be / has been higher. In the West Midlands, for example, data are available for the West Midlands region as a whole, but also for the West Midlands Urban Area which includes specific local authorities deemed to be at greater risk of high air pollution levels, such as Birmingham City, City of Wolverhampton and Walsall Borough Councils. There is a similar agglomeration zone in The Potteries (Stoke-on-Trent and surrounds) and Coventry and Bedworth.

The data are measured such the West Midlands region-wide data will include breaches from **any part** of the West Midlands. In other words, if one small area of Birmingham registered a six for air pollution on a given day, whereas nowhere else exceeded a three, the overall

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[20] https://uk-air.defra.gov.uk/data/DAQI-regional-data
[21] https://uk-air.defra.gov.uk/air-pollution/daqi?view=more-info
[22] https://uk-air.defra.gov.uk/air-pollution/daqi

West Midlands figure would read 'six' for that day. The West Midlands Urban Area agglomeration zone would also read a 'six,' as Birmingham falls within it, but The Potteries and Coventry and Bedworth zones would read a 'three.' This means that the regional data will always be higher, or as high, as the agglomeration zones that they encompass. This is an important point when looking at how the geographical areas have been determined, as shown below.

Another important point is that DAQI data are not available for all agglomeration zones. For example, one cannot view data for the Coventry and Bedworth or The Potteries zones, but can for the West Midlands Urban Area zone. This reduces further the flexibility of use of the data for this analysis.

In light of this, the DAQI geographical boundaries used to determine air quality levels in combined authority areas are as follows (AZ = Agglomeration Zone):

Combined authority	DAQI area used	Justification
Cambridge & Peterborough	East of England region	There is no smaller AZ in the Cambridge or Peterborough area
Greater Manchester	Greater Manchester Urban Area AZ	The AZ covers all districts in the CA area
Liverpool City Region	Liverpool Urban Area AZ	The AZ covers all but one district in the CA area; using the North West region data would be too large and would also include Greater Manchester
North East	North East region – joined with Tees Valley CA	Tyneside AZ does not cover all districts in CA
Sheffield City Region	Takes an average score across the Sheffield Urban Area AZ and the East Midlands region	Parts of Derbyshire and Nottinghamshire are included in the Sheffield City Region CA and should be considered in the data, and the CA boundaries cross over two regions
Tees Valley	North East region – joined with North East CA	Teesside AZ does not cover all districts in CA
West of England	Bristol Urban Area AZ	The AZ covers all districts in the CA area
West Yorkshire	Yorkshire & Humberside region	West Yorkshire Urban Area AZ does not cover all districts in CA
West Midlands	West Midlands region	West Midlands Urban Area AZ does not cover all districts in CA

The consequence of these groupings is that some regions are unlikely to portray the reality of air pollution levels in the CA areas. The Cambridge & Peterborough combined authority conveys the most significant example of this, as by the requirement of using the data for the whole of the East of England means that few of the specified days where air pollution was recorded on the DAQI scale as four or higher are likely to have been recorded within the much smaller CA area. However, the data still provides a good indication of air pollution levels, especially in the more urbanised combined authority areas.

These air quality data are updated daily, therefore we analysed data from 1 January 2010 and up to the end of December 2018 to a) commence from the consistent 2010 baseline and b) to obtain the latest full years' worth of data as possible.

This year, we have also supplemented these data with a new metric that looks at mortality rates as a consequence of exposure to poor air quality (see later in this annex). This has improved the granularity at which one can determine the impacts of air quality levels across the CAs, as these data are broken down at local authority level.

Environment: Renewable electricity generation

There are several data sources that analyse renewable electricity, namely focusing on installed capacity, number of sites and amount of energy generated. This report focuses on the latter, as this provides a more useful picture of how much of the overall energy consumed was actually renewable, rather than the potential generation from renewable sources. Data is broken down by local authority and by renewable energy type (e.g. solar photovoltaic, onshore wind, anaerobic digestion etc.) but only includes electricity generated by renewables and not heat, which is not available at such a detailed level. The data are collated and published by the Department for Business, Energy and Industrial Strategy (BEIS).[23]

The data only go as far back in time as 2014 and is available approximately six months in arrears; 2017 was the latest available data for this report. Whilst the baseline for most of the above metrics is 2010, this is not possible for renewable generation but also less important, as at present the WMCA does not measure renewable generation and, therefore, does not have its own baseline in place. Renewable electricity generation data is measured in megawatt hours (MWh) and as with other datasets, we analysed the difference between the earliest (2014) and latest (2017) figures and the two most recent years' figures (2016 and 2017) to gauge trends.

An overall average total for renewable electricity generated was calculated for each combined authority. It is recognised that some combined authorities have access to a greater variety of renewable sources; for example, coastal CAs will have access to offshore wind and tidal and rural areas are likely to have more land on which to install onshore wind turbines or use farming processes to viably install anaerobic digesters. Therefore, these total results should be treated with caution as it is recognised that certain areas, inland CAs in particular, are unlikely to be able to compete with others in terms of generating more of their electricity by renewable sources.

As such, we have also analysed the amount of renewable electricity generated by solar photovoltaics in each CA area. Solar PV is the one renewable source that can be implemented anywhere, so it was felt that this is a more useful and comparative metric to

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[23] https://www.gov.uk/government/statistics/regional-renewable-statistics - see bottom link on this page.

analyse. However, it is recognised that even energy generated from PV is dependent upon numerous factors; some parts of the country receive more sunshine than others, for example, and others may have more rural land capacity to install larger-scale solar farms. However, overall solar PV is the most uniform type of renewable energy source that gives an indication of the appetite of renewable electricity uptake.

Finally, the data for the West Yorkshire Combined Authority was hugely skewed due to the Drax Power Plant located in the local authority of Selby, which has transitioned from coal to biomass in recent years. As such, Selby generated over nine million MWh of renewable electricity in 2017 (with the vast majority of this attributed to 'plant biomass' from the Drax plant), compared to the next highest value in any local authority included in this analysis of 516,000. It can be seen from this how much the Drax plant skews the data significantly. Therefore, we calculated the total renewable electricity generated in Selby both with and without the 'plant biomass' data, the latter of which provides a more useful comparison across CAs. The average MWh generated across all combined authorities differs by a factor of approximately 112,000 (in 2017) depending on whether the generation data from Drax is included or not. Figures 7-10 in section 2.3 of this report show the difference in renewable generation figures depending on whether the Drax plant is included in the data or not.

Environment: Recycling

Both household and non-household recycling rates were analysed using data provided by the Department for Environment, Food and Rural Affairs (Defra).[24]

The waste data reflect that collected by local authorities and is geographically sub-divided as such. In the case of household recycling, this means that it 'contains materials sent for recycling, composting or reuse by local authorities as well as those collected from household sources by 'private/ voluntary' organisations.' In the case of non-household recycling, this 'includes municipally collected materials for recycling from commercial sources. It excludes material which was collected for recycling from non-household sources but actually rejected at collection or at the gate of a recycling reprocessor.' For both, we have used a percentage of the total amount of waste generated that has been recycled. For household waste, a percentage of total household waste recycled is already provided within the data. For non-household waste, total percentage recycled figures were calculated by using the total non-household waste sent for recycling divided by the total amount of non-household waste generated and multiplied by 100.

Data are provided in financial years, e.g. 2010/11. For ease of comparison between this and other metrics, we have taken 2010/11 to be 2010, 2011/12 to be 2011, and so on. Nine months of the previous calendar year are also included in each financial year, so it is more sensible to convert backwards than forwards (i.e. 2010/11 becomes 2010 and not 2011). Non-household recycling data are available from 2014 to 2017 and household data are

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[24] https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables

available from 2010 to 2017 and it is these ranges we have used. As with the other datasets, we have compared the oldest and most recent years' data with each other for both non- and household waste, as well as compared the second-most recent and most recent years' data.

There is some uncertainty about a few of the non-household data which on occasion show that an authority recycled more waste than it generated in total; for example, in 2014, Solihull in the West Midlands recycled 146.8% of its non-household waste. It is assumed, but not clarified, that this means it recycled much of its own but also other local authority areas' household waste. In this case, it could be neighbouring Warwick, for example, which according to the data did not generate any non-household waste in 2014. Whilst the number of local authorities that show a data skew of this nature are few, it is still an aspect of this report that needs to be analysed with caution and further investigation needs to take place as to why this is the case.

Another key factor to consider is that some of the local authorities are waste collection authorities, some are waste disposal and others are unitary, i.e. they do both. In general, where a two-tier local authority system is in place, the lower tier authority collects waste and the upper-tier authority disposes of it. We deemed it important to determine how much waste collected and disposed of was recycled and therefore we analysed both. In some cases, a waste disposal authority only covers part of a combined authority area. For example, the West Midlands Combined Authority includes four out of eight districts in Staffordshire, therefore meaning that waste disposal data reflecting Staffordshire County Council only applies to half of this part of the CA. However, we have included the data for Staffordshire County Council in the overall average because it still provides a useful indication of its recycling effort. The only caveat is that it is unknown whether there is a significant discrepancy in the amount of disposed waste that is recycled from the four districts the CA covers compared to the four it does not, but overall, we assume that this difference is unlikely to be huge. The top-tier waste disposal authorities where this applies are Staffordshire (West Midlands CA), Worcestershire (West Midlands CA), Derbyshire (Sheffield City Region CA), Merseyside Recycling and Waste Authority (Liverpool City Region CA) and North Yorkshire (West Yorkshire CA). The other top-tier disposal authorities (Cambridgeshire and Greater Manchester) are fully enclosed within the CA boundary.

The final factor for consideration is that in 2016, the district collection authorities of Cambridge and South Cambridgeshire (part of Cambridge and Peterborough CA) began to report their waste jointly. We have therefore used the same percentage figure for both districts in this year and since.

Environment: Sites in positive conservation management

This metric looks at the number of sites in positive conservation management, to help reflect activity and progress of managing the natural environment. There are few metrics that provide a measurement of this sort of activity, especially that are broken down into a

geography that allows for comparison between CA's, but data outlining the percentage of sites in positive conservation management is the most useful in this respect.

In the case of this dataset, local 'sites' refers to areas designated locally for their substantive nature conservation importance, either for wildlife or geology. These sites are managed so as to preserve their nature conservation interest (i.e. are in "positive conservation management"). The data allows assessment of the percentage of the total number of local sites in England where positive conservation management is being or has been implemented. Assessing the extent of positive management can help to identify sites where such management is lacking. This will help to concentrate the efforts of local site partnerships in ensuring the sites are managed appropriately and their nature conservation value is maintained or enhanced.[25]

This data is collected by local authorities and collated by Defra.[26] Only county and unitary authorities collect the data, therefore data at district level is not available. This is similar to the NUTS classification outlined in a later section of this methodology, with respect to economic productivity. However, for the purposes of this metric, we have used slightly different authorities' data to gain as complete a picture as possible of sites in positive conservation management. In short, where a county council authority covers half or more of the districts included in a CA, we have included its data. The table below describes this.

Combined authority	Geographical area dataset reflects C = County | U = Unitary	Justification for inclusion of authorities
Cambridge & Peterborough	Cambridge C Peterborough U	Covers all districts in the CA area
Greater Manchester	Bolton U Bury U Manchester U Oldham U Rochdale U Salford U Stockport U Tameside U Trafford U Wigan U	Covers all authorities in the CA area
Liverpool City Region	Halton U Knowsley U Liverpool U Sefton U St Helens U Wirral U	Covers all authorities in the CA area
North East	County Durham U Gateshead U	Covers all authorities in the CA area

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[25] https://www.gov.uk/government/statistics/local-sites-in-positive-conservation-management--2
[26] https://www.gov.uk/government/statistical-data-sets/env10-local-sites-in-positive-conservation-management

Combined authority	Geographical area dataset reflects C = County | U = Unitary	Justification for inclusion of authorities
	Newcastle U North Tyneside U Northumberland U South Tyneside U Sunderland U	
Sheffield City Region	Barnsley U Derbyshire C Doncaster U Rotherham U Sheffield U	Includes all districts and authorities within CA area except Bassetlaw, which is in Nottinghamshire. Nottinghamshire C not included, as Bassetlaw is only one out of seven districts. Derbyshire C is included, as four out of eight districts (i.e. half) in this CA are covered by Derbyshire C (Derbyshire Dales, North East Derbyshire, Chesterfield and Bolsover), therefore it is reasonable to include it.
Tees Valley	Darlington U Hartlepool U Middlesbrough U Redcar & Cleveland U Stockton U	Covers all authorities in the CA area
West of England	Bath & North East Somerset U Bristol U South Gloucestershire U	Covers all authorities in the CA area
West Yorkshire	Bradford U Calderdale U Kirklees U Leeds U Wakefield U York U	Does not include Craven, Harrogate and Selby districts as they only make up three out of seven districts in North Yorkshire C (i.e. less than half of the county council area).
West Midlands	Birmingham U Coventry U Dudley U Sandwell U Solihull U Staffordshire C Walsall U Warwickshire C Wolverhampton U Worcestershire C	Includes Staffordshire C as this county covers four out of eight (i.e. half) of the districts within the CA area (East Staffordshire, Lichfield, Tamworth and Cannock Chase). Includes Worcestershire C as this county covers three out of six (i.e. half) of the districts within the CA area (Bromsgrove, Redditch and Wyre Forest). Includes Warwickshire C as this covers all districts in CA.

Naturally, some of the manipulation of geographical boundaries above will result in the affected CA areas returning less accurate data than others, but on most occasions the discrepancy is only likely to be small.

It used to be mandatory for local authorities to report on this metric, up until the abolishment of National Indicators in 2010. Since then, reporting is optional and therefore

there are an increasing number of gaps in the data where local authorities have not reported. For example, in 2017, only 46% of authorities we have included above reported on this metric. The figure in 2010, the baseline year we have used, stood at 93%. To help fill in these gaps, we took the figure from when the authority last reported and assumed it was the same in any subsequent years where it did not report. For example, if an authority reported a figure of 70% of sites in positive conservation management in 2010, then 65% in 2011, then nothing in 2012 or 2013, then 75% in 2014, then nothing in 2015, 2016 or 2017 we manipulated the data so that it read thus…

2010	2011	2012	2013	2014	2015	2016	2017
70	65	65	65	75	75	75	75

…whereby red font indicates estimated readings, based on the most recent actual recorded figure. The table below shows which authorities have reported when and which figures have been used in each year. Red shading indicates no data and the arrows indicate from which year the null returns have been estimated. Blank cells mean the data is recorded accurately by the LA.

CA	LA	2010	2011	2012	2013	2014	2015	2016	2017
Cambridge & Peterborough	Cambridgeshire CC								
	Peterborough								
Greater Manchester	Bolton								
	Bury								
	Manchester								
	Oldham								
	Rochdale								
	Salford								
	Stockport								
	Tameside								
	Trafford								
	Wigan								
Liverpool City Region	Halton								
	Knowsley								
	Liverpool								
	Sefton								
	St Helens								
	Wirral								
North East	County Durham								
	Gateshead								
	Newcastle								
	North Tyneside								
	Northumberland								

CA	LA	2010	2011	2012	2013	2014	2015	2016	2017
	South Tyneside								
	Sunderland					→	■	—	■→
Sheffield City Region	Barnsley								
	Derbyshire CC								
	Doncaster								
	Rotherham				→	■	■	■	■→
	Sheffield								
Tees Valley	Darlington				→	■	■	■	■→
	Hartlepool								
	Middlesbrough								
	Redcar & Cleveland	→	■→						
	Stockton					→	■→		
West of England	Bath & North East Somerset				→	■	■	■	■→
	Bristol					→	■	■	■→
	South Gloucestershire	←■	→			→	■→		■→
West Yorkshire	Bradford					→	■→		
	Calderdale					■	■	■	■→
	Kirklees				→	■	■	■	■→
	Leeds				→	■	■	■	■→
	Wakefield	→	■→					→	■→
	York								
West Midlands	Birmingham								
	Coventry					→	■→		
	Dudley					→	■	■	■→
	Sandwell					→	■	■	■→
	Solihull		→	■→		→	■	■→	
	Staffordshire CC								
	Walsall	→	■	■	■	■	■	■→	
	Warwickshire					→	■→		
	Wolverhampton				→	■	■	■	■→
	Worcestershire CC				→	■	■	■	■→

The table clearly shows that much of the data are missing and therefore the estimated data we have used from previous years may be inaccurate. However, it was deemed a more complete picture to use the data from the previous years' return(s) rather than remove it entirely, as this would render comparisons between each CA very difficult. The exception to this principle is in the authorities of Tameside and Trafford, both in Greater Manchester CA, which have never recorded their percentage sites in positive conservation management since and including 2010, therefore these authorities' data have not been included in the Greater Manchester CA overall average.

Finally, data for this metric is provided in financial years, e.g. 2010/11. For ease of comparison between this and other metrics, we have taken 2010/11 to be 2010, 2011/12 to be 2011, and so on. Nine months of the previous calendar year are also included in each financial year, so it is more sensible to convert backwards than forwards (i.e. 2010/11 becomes 2010 and not 2011). As with the other datasets, we have compared the oldest and most recent years' data with each other, as well as compared the second-most recent and most recent years' data.

Environment: Water quality (NEW)

Data reflecting water quality was provided by the Environment Agency and is available on its dedicated catchment data search.[27] However, at the point this was known, analysis of water quality across all combined authorities could not be carried out within the timescales of this report. Therefore, a fairly basic analysis just for the WMCA area was completed as outlined in section 3.6.

However, there are many caveats to the accuracy of the results that this data shows, as presented below.

- The data are provided in river basin and management catchment geographies, which do not marry up with local authority / combined authority boundaries. It is, therefore, very difficult to analyse an entire CA area without including data from areas outside the CA, or indeed, to avoid the latter, missing out some parts of the CA. The Environment Agency has informed us that it is possible to use a mapping tool to draw local authority/CA boundaries[28] around catchments to obtain data only for this area, but it is apparent that this will still generate overlapping results. Moreover, this level of sophisticated analysis was not possible in the timeframes available. Therefore, data downloaded reflected the catchment boundaries that closest matched the WMCA's local authority boundaries, and it is estimated that of the area analysed, 95% of the combined authority area is included, albeit approximately 15% of the total data analysed reflects locations outside the WMCA boundary. The catchments analysed are below, including an approximation of which local authorities/LEPs they cover:

	Location		
River basin area	**Management catchment**	**Operational catchment**	**Local authorities covered**
Severn	**Avon Warwickshire**	**Avon Rural Rivers and Lakes**	**Central and south Warwickshire**
		Avon Urban Rivers and Lakes	**Coventry, north Warwickshire and Redditch**
	Severn Middle Worcestershire	**Stour Upper Worcestershire Rivers and Lakes**	**Wolverhampton and west Black Country**
Humber		**Blythe Rivers**	**East Birmingham and west Coventry**

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[27] https://environment.data.gov.uk/catchment-planning/
[28] https://environment.data.gov.uk/catchment-planning/data-download/#/

	Tame Anker and Mease	Tame Lower Rivers and Lakes	East Black Country
		Tame Upper Rivers	South Black Country, Birmingham, Solihull, Lichfield and Tamworth

- It transpired following conversations with the Environment Agency that the way in which water quality data were collected changed somewhat in 2015. Therefore, despite data in some cases going as far back in time as 2010, all data prior to 2015 were filtered out to ensure comparisons can be made year on year. The latest available data are from 2016, therefore at present only two years' worth of data are available.
- When measuring water quality, the Environment Agency describes it in textual terms, e.g. high, good, supports good, moderate, poor etc. To determine trends and comparisons, the easiest method is to convert these into a value providing a numerical indication of how good the water quality is in a given water course. However, this is complicated further as water quality classifications vary depending on the type of pollutant, as indicated on the EA website.[29] Therefore, assumptions had to be made as to how the diagram given on this webpage and the colours used to indicate the level of classification could be converted numerically using an IF equation in Excel. The below table is how the data were classified for the purposes of this report. It is true, therefore, that the numerical conversions of classifications may not paint a totally accurate picture, but will at least provide an indication of areas where water quality is generally worse than others. Again, with time and knowledge of the raw data available, it would be possible to do a more detailed analysis as to which areas are affected by which types of pollutant and, consequently, what the impacts would be of these, but this was well beyond the scope and timescales of this report.

0 – 1.49=	1.5 – 2.49=	2.5 – 3.49=	3.5 – 4.49=	4.5 – 5=
Bad and Fail	Poor and moderate or less	Moderate and Does Not Support Good	Good and Supports Good	High

- It should also be noted that a few rows of the datasets were classified as 'does not require assessment.' These were, therefore, removed from the analysis.

Next year, it is suggested that the EA carries out the data analysis for this metric due to their expertise on what the data are showing and the level of sophistication/GIS application that is likely to be required that reflects what the WMCA would like to see. This ought to be requested well in advance in liaison with the WMCA's Environment Board representative initially, followed by contacts made by SWM and the EA's national data team.

Environment: Flood risk (NEW)

Data reflecting flood risk is held by the Environment Agency and to obtain data reflecting properties at risk from fluvial (flooding from water courses) and pluvial (surface water) flooding requires the EA's national data team to analyse and then submit the required information. Unfortunately, flood risk data could not be obtained for all CAs within the timescales of this report.

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[29] https://environment.data.gov.uk/catchment-planning/help#help-status-classes-surface-water

We were provided with an overview of the number of properties at risk of flooding covering most of the WMCA area, as indicated by the table given in section 3.7 of this report, which provides a helpful starting point as to the scale of the problem. However, the main caveat with this dataset is that it is not clear what year the flood risk refers to. Data reflecting the number of properties in a given area is from 2011, but it is not clear whether the flood risk scenario is from the same year.

Next year, it is suggested that the data required is requested well in advance in liaison with the WMCA's Environment Board representative initially, followed by contacts made by SWM and the EA's national data team.

Social: Health inequality

WMCA target: Reduction in average health inequality gap by 5.9 years for men and 3.9 years for women by 2030.

Health inequality is given by local authority area as presented in the data collated by Public Health England (PHE).[30] Their health profile reports each provide a health inequality figure, the gap in life expectancy between the poorest and richest areas in a local authority area, for both males and females. The larger the gap, the greater the inequality.

For consistency with the WMCA and SWM targets for both health related and other metrics, a 2010 baseline was used, however, given the way the PHE health profiles are presented meant that a few assumptions needed to be worked out initially.

- Each report's health inequality data is given in bandings. For example, the latest publications from 2018 show health inequality data for 2014-2016. This means that an average figure across these three years has been calculated.
- The 2017 reports show data for 2013-2015, the 2016 reports show data for 2012-2014, the 2015 reports show data for 2011-2013 and the 2014 reports show data for 2010-2012.
- In each of these cases, we have taken the average of the banding as representative of our year of analysis for the upper year of the banding, in other words, 2014-2016 = 2016, 2013-2015 = 2015, 2012-2014 = 2014, 2011-2013 = 2013 and 2010-2012 = 2012. This is mainly for consistency, as other metrics' data also end in 2016.
- The banding length, however, changes in the 2013 reports and earlier. The banding average health inequality figures given in the 2013 reports are 2006-10, i.e. five years not three. As such, the banding average given in the 2012 reports is also 2006-10 and therefore the health inequality figures are the same for both 2011 and 2010.
- We have taken the latter as the baseline (and labelled it '2010/11' to reflect that the figures are the same in both years) and then used the subsequent five years' worth of reports to project forward to 2016.

All figures are given for both males and females and as with carbon emissions an actual and percentage change has been calculated between both 2010/11 and 2016 and 2015 and

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[30] https://fingertips.phe.org.uk/profile/health-profiles

2016 for each combined authority area. The actual difference between male and female inequality for each area was also calculated to determine any useful patterns.

Social: Fraction of mortality attributable to particulate air pollution (NEW)

This dataset, a new addition for this report, has been included on the back of a recommendation given in the previous iteration of this report, which stated that: *"It is currently very difficult to compare air quality data between one CA and another due to the way the data provided by Defra is geographically divided. It is also difficult to know where within the WMCA area the worst areas for air pollution are using this data. As such, the WMCA should investigate with Defra whether data are available at a more granular level."*

Following liaison with Public Health England (PHE), SWM was signposted to a dataset that reflects the impact of PM2.5 particulates on mortality rates. This is the 'Fraction of mortality attributable to particulate air pollution;'[31] in other words, the percentage of people who die as a consequence of exposure to PM2.5 particulate emissions. This is found on PHE's Fingertips database, the same portal that provides health inequality data.

This particular dataset has been chosen for analysis for the following reasons:
- It came recommended for use by PHE.
- It is broken down into local authority geography and therefore addresses the granularity issue outlined above. The data have also been collated across all LAs since 2011, therefore provides the opportunity for analysing temporal variations.
- Although the data only reflect mortality rates by PM2.5, it is increasingly well-known that these particulates are the greatest risk to human health.[32] Ideally, analysis of the impact of all air pollutants would be carried out, but no data reflecting this have yet been found.
- The data do, however, express the **impact** that exposure to poor air quality can have on mortality rates. Looking at impact is arguably more important than just how polluted the air actually is in a given area, as the reasons behind mortality could be as a result of factors such as demographics and urbanisation, rather than solely the quantity of PM2.5 in the air.

The data is provided as a percentage for each local authority and, as outlined above, go back to 2011. The latest available data reflect 2017. As with other metrics, we have compared the latest and oldest years' data with each other and the two most recent years' data with each other.

Social: Fuel poverty

Data reflecting the percentage of homes in fuel poverty is available by local authority and is provided by BEIS.[33]

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[31] https://bit.ly/2IKavqc
[32] https://laqm.defra.gov.uk/public-health/pm25.html
[33] https://www.gov.uk/government/collections/fuel-poverty-sub-regional-statistics

In 2013, the government changed the officially recognised definition of what is meant by fuel poverty to a definition known as 'low income, high costs.' Analysing the available fuel poverty data shows that there is a sudden decline in fuel poverty levels from 2011 onwards, when compared to 2010 data. SWM has found no evidence to confirm this, but we have assumed that the 'low income, high costs' methodology was back-dated to data from 2011. The spreadsheets reflecting the data from 2011 to 2016 (the latest available date) inclusive state on the front page that the data are 'low income, high costs' defined, whereas the cover on the 2010 spreadsheet does not. On this basis, we have taken 2011 as a baseline as the 2010 data do not appear to be directly comparable to the rest.

The fuel poverty data are broken down into local authority area and, as outlined above, go back to 2011. The latest available data reflect 2016. As with other metrics, we have compared the latest and oldest years' data with each other and the two most recent years' data with each other.

Economic: productivity

> **WMCA target:** Increase GVA per head to £33,604 by 2030.

Economic productivity is measured by looking at Gross Value Added data, which reflects the measure of the value of goods and services produced in an area. This data is compiled by the Office for National Statistics[34] and is broken down geographically into the third level of nomenclature of territorial units for statistics (NUTS3) territories.[35] Initially, one was required to determine which local authorities fit into which NUTS3 territory[36] to work out whether to include its associated GVA data in the overall combined authority economic productivity data. The breakdown is included in the table below.

Combined authority	NUTS3 area	Local authorities covered	Justification
Cambridge & Peterborough	Cambridge CC	Cambridge East Cambridgeshire Fenland Huntingdonshire South Cambridgeshire	Covers all districts in the CA area
	Peterborough	Peterborough	
Greater Manchester	Greater Manchester South West	Salford Trafford	Covers all districts in the CA area
	Greater Manchester South East	Stockport Tameside	
	Greater Manchester North West	Bolton Wigan	

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[34] http://bit.ly/2oj8aVn
[35] http://bit.ly/2s45643
[36] https://www.ons.gov.uk/methodology/geography/ukgeographies/eurostat

Combined authority	NUTS3 area	Local authorities covered	Justification
	Greater Manchester North East	Bury Oldham Rochdale	
Liverpool City Region	East Merseyside	Knowsley St. Helens Halton	Covers all districts in the CA area
	Liverpool	Liverpool	
	Sefton	Sefton	
	Wirral	Wirral	
North East	Durham	Durham	Covers all districts in the CA area
	Northumberland	Northumberland	
	Tyneside	Gateshead Newcastle upon Tyne North Tyneside South Tyneside	
	Sunderland	Sunderland	
Sheffield City Region	Barnsley, Doncaster and Rotherham	Barnsley Doncaster Rotherham	CA data used does not include Bassetlaw (which makes up just one district out of five in North Nottinghamshire NUTS3 territory) or Derbyshire Dales (which makes up just one district out of five in SW Derbyshire NUTS3 territory)
	Sheffield	Sheffield	
	East Derbyshire	Bolsover Chesterfield North East Derbyshire	
Tees Valley	Hartlepool and Stockton-on-Tees	Hartlepool Stockton-on-Tees	Covers all districts in the CA area
	South Teesside	Middlesbrough Redcar and Cleveland	
	Darlington	Darlington	
West of England	Bristol, City of	Bristol, City of	Covers all districts in the CA area along with North Somerset; omitting this NUTS3 area from the CA data analysis would paint an incomplete picture for the sake of not including one extra local authority
	Bath & NE Somerset, N Somerset & S Gloucestershire	Bath and North East Somerset North Somerset South Gloucestershire	
West Yorkshire	York	York	CA data used does not include Craven, Harrogate and Selby (which make up just three out of seven districts in North Yorkshire CC NUTS3 territory)
	Bradford	Bradford	
	Leeds	Leeds	
	Calderdale and Kirklees	Calderdale Kirklees	
	Wakefield	Wakefield	
West Midlands	Birmingham	Birmingham	CA data used does not include Cannock Chase, East
	Solihull	Solihull	

Combined authority	NUTS3 area	Local authorities covered	Justification
	Coventry	Coventry	Staffordshire, Lichfield or Tamworth (which make up just half of Staffordshire CC NUTS3 territory) or Bromsgrove, Redditch and Wyre Forest (which make up just half of Worcestershire CC NUTS3 territory)
	Dudley	Dudley	
	Sandwell	Sandwell	
	Walsall	Walsall	
	Wolverhampton	Wolverhampton	
	Warwickshire	North Warwickshire Nuneaton and Bedworth Rugby Stratford-on-Avon Warwick	

As with all other metrics, we have used 2010 as a baseline and used the latest available annual figures which are from 2017. Also, as with other datasets, we analysed the difference between the 2010 and 2017 figures and 2016 and 2017 figures to gauge trends.

As with carbon emissions, GVA is also measured per head of population (in £), which we have again analysed along with actual GVA figures (in £ million) to give a more comparable picture of where GVA is peaking regardless of demographic circumstances or population density. GVA per head is also the metric the WMCA uses to benchmark its progress on economic productivity as given in its Strategic Economic Plan.

Economic: Emissions Intensity Ratio (NEW)

Another new WMCA Environment Board priority is to analyse the Emissions Intensity Ratio (EIR) as part of this report. In short, the EIR *"incorporates economic performance into an official decarbonisation measurement"*[37] and is essentially the amount of CO_2 emitted divided by the GVA of a given area, in other words, an analysis as to whether economic growth had a negative impact on carbon emissions. The lower the EIR, the more sustainable the economic growth has been with respect to carbon. For this report, it has been calculated using the following method:

- The economic productivity data (GVA) are broken down into NUTS regions (see above), whereas carbon emissions data are broken down into local authority areas. In some cases, NUTS regions envelope a number of local authorities and do not always align with combined authority boundaries. Therefore, a manipulation exercise took place whereby we were required to combine the local authority carbon data into the NUTS GVA data, as follows:

Combined authority	NUTS3 area	Local authorities covered	How the carbon emissions data manipulated to fit NUTS boundaries
Cambridge & Peterborough	Cambridge CC	Cambridge East Cambridgeshire	Data for the local authorities located in the NUTS area of

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[37] https://eciu.net/blog/2018/emissions-intensity-ratio-the-new-panacea

Combined authority	NUTS3 area	Local authorities covered	How the carbon emissions data manipulated to fit NUTS boundaries
		Fenland Huntingdonshire South Cambridgeshire	Cambridge CC summed, together with Peterborough where the NUTS and local authority boundaries already match.
	Peterborough	Peterborough	
Greater Manchester	Greater Manchester South West	Salford Trafford	Data for the local authorities located in the different NUTS areas of Manchester summed, then summed together
	Greater Manchester South East	Stockport Tameside	
	Greater Manchester North West	Bolton Wigan	
	Greater Manchester North East	Bury Oldham Rochdale	
Liverpool City Region	East Merseyside	Knowsley St. Helens Halton	Data for the local authorities located in the NUTS area of East Merseyside summed, together with the other authorities where the NUTS and local authority boundaries already match.
	Liverpool	Liverpool	
	Sefton	Sefton	
	Wirral	Wirral	
North East	Durham	Durham	Data for the local authorities located in the NUTS area of Tyneside summed, together with the other authorities where the NUTS and local authority boundaries already match.
	Northumberland	Northumberland	
	Tyneside	Gateshead Newcastle upon Tyne North Tyneside South Tyneside	
	Sunderland	Sunderland	
Sheffield City Region	Barnsley, Doncaster and Rotherham	Barnsley Doncaster Rotherham	Data for the local authorities located in the NUTS areas of East Derbyshire, and Barnsley, Doncaster and Rotherham summed, together with Sheffield where the NUTS and local authority boundary already matches. Carbon data reflecting Bassetlaw and Derbyshire Dales local authorities removed as this is not included in GVA analysis due to conflicting NUTS boundaries.
	Sheffield	Sheffield	
	East Derbyshire	Bolsover Chesterfield North East Derbyshire	

Combined authority	NUTS3 area	Local authorities covered	How the carbon emissions data manipulated to fit NUTS boundaries
Tees Valley	Hartlepool and Stockton-on-Tees	Hartlepool Stockton-on-Tees	Data for local authorities located in the NUTS areas of South Teeside, and Hartlepool and Stockton-on-Tees summed, together with Darlington where the NUTS and local authority boundary already matches.
	South Teesside	Middlesbrough Redcar and Cleveland	
	Darlington	Darlington	
West of England	Bristol, City of	Bristol, City of	Data for local authorities located in the NUTS area of Bath & NE Somerset, N Somerset & S Gloucestershire summed, together with Bristol where the NUTS and local authority boundary already matches.

Carbon data reflecting North Somerset local authority added as this is included in GVA analysis to fit with conflicting NUTS boundaries. |
| | Bath & NE Somerset, N Somerset & S Gloucestershire | Bath and North East Somerset North Somerset South Gloucestershire | |
| West Yorkshire | York | York | Data for the local authorities located in the NUTS area of Calderdale and Kirklees summed, together with the other authorities where the NUTS and local authority boundaries already match.

Carbon data reflecting Craven, Harrogate and Selby local authorities removed as this is not included in GVA analysis due to conflicting NUTS boundaries. |
	Bradford	Bradford	
	Leeds	Leeds	
	Calderdale and Kirklees	Calderdale Kirklees	
	Wakefield	Wakefield	
West Midlands	Birmingham	Birmingham	Data for the local authorities located in the NUTS area of Warwickshire summed, together with the other authorities where the NUTS and local authority boundaries already match.
	Solihull	Solihull	
	Coventry	Coventry	
	Dudley	Dudley	
	Sandwell	Sandwell	
	Walsall	Walsall	
	Wolverhampton	Wolverhampton	
	Warwickshire	North Warwickshire	

Combined authority	NUTS3 area	Local authorities covered	How the carbon emissions data manipulated to fit NUTS boundaries
		Nuneaton and Bedworth Rugby Stratford-on-Avon Warwick	Carbon data reflecting Cannock Chase, East Staffordshire, Lichfield Tamworth, Bromsgrove, Redditch and Wyre Forest local authorities removed as this is not included in GVA analysis due to conflicting NUTS boundaries.

- Following this, a new total $ktCO_2$ figure was determined for each combined authority, to match the GVA figures used within the boundaries of NUTS.
- The $ktCO_2$ figure was then converted to tonnes of CO_2 by multiplying by 1,000.
- The EIR was then established for each CA by dividing this new 'tonnes of CO_2' figure with the GVA figure, in £million. This then provided the EIR figure; the smaller this figure, the less CO_2 is emitted per £million GVA and thus the less impact economic growth has had on carbon emissions.

Both the carbon and economic productivity datasets stretch as far back in time as 2010, so this is the baseline for EIR. However, carbon emissions data is currently only available up to 2016 compared to 2017 for economic productivity, therefore 2016 was required to be used as the latest available year for both datasets when calculating the EIR.

As with other datasets, we also analysed the difference between the 2010 and 2016 figures and 2015 and 2016 figures to gauge trends.

-END-