eunomia

# Recycling Carbon Index

England, Wales & Northern Ireland Local Authorities 2017/18

Summer 2019

# About Eunomia Research & Consulting

Eunomia provides environmental consultancy to waste collection and treatment companies, to investors and to local, national and European government. In all of our work we aim to help our clients understand how the environmental and cost performance of the services and products they provide can be improved. We have modelled the carbon and other environmental impacts of waste collection and treatment services for a large number of clients including:

- European Commission Directorate General of the Environment. We have provided detailed advice on the impacts of changes to waste management across the European Union, informing the EU's circular economy proposals, assisted the EU in understanding member states' compliance with current rules, and are closely involved in developing the EU's guidance on its new waste legislation.
- Devolved administrations in Scotland and Wales. We have helped the devolved governments develop progressive waste management policies, including proposals for a deposit refund scheme in Scotland.
- UK Local Government. Eunomia has carried out waste collection and treatment reviews and assessments for a large number of local authorities in England, Wales, Scotland and Northern Ireland, and assists councils that are trying to reduce their carbon footprint.
- Private companies. We advise businesses, manufacturers, retailers and waste management organisations on how to adopt more circular business models.

Our intention in publishing this work free of charge is to help local authorities and their service providers to think about the environmental performance of the services they provide. An authority's recycling rate is an interesting and important metric, but there are other, equally valuable measures of a service's environmental performance, including the carbon index presented in this report.

# What is the Carbon Index?

This is the seventh edition of Eunomia's Local Authority Recycling Carbon Index. It gives councils an alternative and arguably better measure of the environmental performance of their waste and recycling services than a purely weight-based measure. The Index shows which local authorities' recycling activities are delivering the greatest carbon benefits. Reading it alongside the recycling rate and other metrics provides a fuller picture of the benefits achieved by waste and recycling services.

This and previous years' results are available through our interactive website (***www.eunomia.co.uk/carbonindex***) where authorities can track and compare their performance**.**

# How is it Calculated?

Local authorities' recycling performance data for 2017/18 is taken from WasteDataFlow[1] and multiplied by the same carbon 'factors' used by Zero Waste Scotland to produce the Scottish Carbon Metric.[2] This process converts tonnage data for each recyclable material into carbon dioxide equivalents ($CO_2$ eq.). This shows the total embodied carbon[3] in the material that authorities are diverting from disposal to recycling. Local authorities that collect more of the materials with a higher embodied carbon for recycling will show greater benefits. We also take account of the emissions impact of source separated and comingled collections.

We have calculated the total carbon savings generated from all the recycling reported by each authority, encompassing their kerbside collections, HWRCs and bring sites. Dividing this figure by the population served yields a carbon saving figure per person, thereby allowing an effective comparison between authorities. The formula for the Index is shown below:

$$\frac{\text{Total Carbon Savings (Kg } CO_2 \text{ eq.)}}{\text{Population served}} = \textbf{kg } CO_2 \textbf{ saved per person}$$

The higher the value, the higher carbon savings. Rating authorities in this way demonstrates that a high recycling rate does not necessarily result in the greatest carbon savings.

Small errors in data reporting might significantly affect the ranking of the authorities in the Index tables so the results should be treated as approximate values. For this reason we have created four categories to better reflect the general performance of each authority. These categories are defined as follows:

- **High Flyers** – the top 10%
- **Good Performers** – the next 30%,
- **Mid Performers** – the next 30%, and
- **Low Performers** – the bottom 30%

# Key Findings

England's Carbon Index performance fell by 0.7 points (1.0%) to less than 69 kg $CO_2$eq per capita, due to a fall in the household recycling rate. That decreased by 0.5 percentage points (1.1%) in 2017/18, to 43.2%. This is due to local authorities recycling 349,000 tonnes less material than in 2016/17, reducing the amount of carbon saved. [4]

Northern Ireland's performance on the Carbon Index improved by 3.2 points (4.2%) to almost 79 kg $CO_2$eq, reflecting a 3.8 percentage point (8.4%) increase in the recycling rate to 48.1%.[5]

Wales remains by some distance the country which achieves the greatest carbon saving per capita from local authority recycling. However, its Carbon Index performance suffered a small decrease (of 0.2 points, or 0.2%) in 2017/18, remaining a little over 93 kg $CO_2$eq per capita. This was due to a drop in the published recycling rate, calculated on a different basis from England and Northern Ireland, which fell by 1.1 percentage points (1.7%).[6]

| Kg Collected per Person | 2016/17 | 2017/18 | Change |
|---|---|---|---|
| Garden and food waste | 18.3 | 17.8 | -2.8% |
| Waste food only | 8.2 | 9.2 | 12.7% |
| Garden waste only | 51.0 | 50.3 | -1.5% |
| Textiles | 1.8 | 1.8 | -1.7% |
| WEEE | 4.6 | 4.4 | -3.7% |
| Paper | 29.9 | 29.1 | -2.7% |
| Card | 14.7 | 14.6 | -0.6% |
| Glass | 22.1 | 22.4 | 1.4% |
| Plastic | 8.2 | 8.3 | 1.7% |
| Metal | 9.6 | 9.4 | -1.9% |
| **Total** | **168.0** | **167.3** | **-0.4%** |

The table above shows the weight of the key materials collected for recycling per head of population across England, Wales and Northern Ireland in both 2016/17 and 2017/18. Overall captures of these recyclable materials increased by 0.4%.

Yields of most material streams decreased, with the biggest decrease in percentage terms being in waste electronics. The greatest reductions in terms of Kg per capita were in paper, which has been in consistent decline for several years, and in garden waste - perhaps reflecting an increase in charging for such collections. Food waste was the stream whose capture increased most, both in percentage and weight terms.

1. See: **www.wastedataflow.org**
2. We have used figures from the 2012 and 2013 versions of the **Scottish Carbon Metric** as appropriate.
3. Embodied carbon is defined as the amount of carbon released from material extraction, transport, processing and manufacturing, and all related activities.
4. Source: UK Department for Environment, Food and Rural Affairs (Defra), **Statistics on waste managed by local authorities in England in 2017/18**.
5. Source: Northern Ireland Department for Agriculture, Environment and Rural Affairs (Daera), **Northern Ireland Local Authority Collected Municipal Waste Management Statistics Annual Report 2017/18.**
6. Source: Welsh Government, **Local Authority Municipal Waste Management Report for Wales, 2017-18.**

# English Recycling Carbon Index

The Carbon Index results for 2017/18 are shown alongside the 2016/17 figures for ease of comparison and to highlight changes. The relative positions and groupings of councils within the Index are defined by the 2017/18 data to reflect the latest position. Because we include material collected at HWRCs in addition to kerbside collections, we report performance by Waste Disposal Authority area rather than for Waste Collection Authorities. This helps to ensure a fair comparison between two tier councils and unitary authorities. While the Carbon Index method could be applied to Waste Collection Authorities, their performance would be lower due to HWRCs being operated only at the Waste Disposal Authority level.

## High Flyers

| | 16/17 | 17/18 | |
|---|---|---|---|
| Dorset Waste Partnership | 104 | **108** | ▲ |
| Cheshire West and Chester | 111 | **107** | ▼ |
| Gloucestershire | 102 | **107** | ▲ |
| Bexley | 109 | **106** | ▼ |
| North Somerset | 105 | **102** | ▼ |
| Devon | 97 | **102** | ▲ |
| Somerset | 103 | **100** | ▼ |

## Good Performers

| | 16/17 | 17/18 | |
|---|---|---|---|
| South Gloucestershire | 94 | **97** | ▲ |
| Buckinghamshire | 99 | **96** | ▼ |
| Bath and North East Somerset | 91 | **96** | ▲ |
| Hampshire | 94 | **96** | ▲ |
| Wigan | 87 | **96** | ▲ |
| Cheltenham | 85 | **93** | ▲ |
| Rutland | 89 | **93** | ▲ |
| East Riding of Yorkshire | 92 | **92** | |
| Northamptonshire | 89 | **88** | ▼ |
| West Sussex | 81 | **88** | ▲ |
| Oxfordshire | 96 | **87** | ▼ |
| Worcestershire | 89 | **86** | ▼ |
| Cambridgeshire | 87 | **86** | ▼ |
| Wokingham | 86 | **86** | |
| Milton Keynes | 90 | **85** | ▼ |
| Suffolk | 90 | **85** | ▼ |
| North Yorkshire | 89 | **85** | ▼ |
| North Lincolnshire | 87 | **83** | ▼ |
| Surrey | 86 | **82** | ▼ |
| Torbay | 79 | **82** | ▲ |
| Herefordshire | 86 | **82** | ▼ |
| Essex | 82 | **81** | ▼ |
| Wiltshire | 85 | **81** | ▼ |
| West Berkshire | 83 | **80** | ▼ |
| Swindon | 82 | **80** | ▼ |
| Isle of Wight | 84 | **79** | ▼ |
| Kent | 84 | **79** | ▼ |
| Poole Borough | 77 | **79** | ▲ |
| Cheshire East | 80 | **78** | ▼ |
| Shropshire | 80 | **78** | ▼ |
| Central Bedfordshire | 75 | **77** | ▲ |
| East Sussex | 76 | **76** | |
| Telford and Wrekin | 75 | **76** | ▲ |
| Cumbria | 70 | **76** | ▲ |

## Mid Performers

| | 16/17 | 17/18 | |
|---|---|---|---|
| Bracknell Forest | 79 | **75** | ▼ |
| Darlington | 75 | **75** | |
| City of London | 68 | **74** | ▲ |
| Richmond upon Thames | 74 | **74** | |
| Hertfordshire | 76 | **74** | ▼ |
| York | 70 | **74** | ▲ |
| Doncaster | 65 | **74** | ▲ |
| Norfolk | 73 | **73** | |
| Derbyshire | 74 | **73** | ▼ |
| Lancashire | 77 | **73** | ▼ |
| County Durham | 78 | **72** | ▼ |
| Northumberland | 76 | **72** | ▼ |
| Nottinghamshire | 75 | **72** | ▼ |
| Cornwall | 74 | **72** | ▼ |
| Kingston upon Thames | 67 | **71** | ▲ |
| Bristol | 73 | **70** | ▼ |
| Calderdale | 64 | **70** | ▲ |
| Halton | 68 | **69** | ▲ |
| Leicestershire | 75 | **69** | ▼ |
| Bromley | 66 | **68** | ▲ |
| Staffordshire | 70 | **68** | ▼ |
| Warwickshire | 74 | **68** | ▼ |
| Lincolnshire | 71 | **68** | ▼ |
| Greater Manchester | 69 | **68** | ▼ |
| Merseyside | 67 | **66** | ▼ |
| Warrington | 68 | **66** | ▼ |
| Kingston-upon-Hull | 69 | **65** | ▼ |
| Medway | 67 | **65** | ▼ |
| Peterborough | 67 | **64** | ▼ |
| Plymouth | 58 | **64** | ▲ |
| Windsor and Maidenhead | 68 | **62** | ▼ |
| Wakefield | 64 | **62** | ▼ |
| Southend-on-Sea | 66 | **61** | ▼ |
| Bournemouth | 63 | **61** | ▼ |
| Gateshead | 73 | **61** | ▼ |
| Barnsley | 66 | **60** | ▼ |
| Reading | 63 | **60** | ▼ |
| Bedford | 60 | **60** | |
| Sutton | 55 | **59** | ▲ |
| Merton | 60 | **57** | ▼ |
| Rotherham | 60 | **57** | ▼ |
| Croydon | 64 | **56** | ▼ |
| Southampton | 55 | **56** | ▲ |
| Derby | 53 | **56** | ▲ |

Units = kg $CO_2$ eq. saved per person

In 2017/18, just 29% of English authorities improved their Recycling Carbon Index performance, when compared to 2016/17. However, of those with an improved performance, 46% improved by at least 3kg of $CO_2$eq. per person.

**Poor Performers**

| | 16/17 | 17/18 | |
|---|---|---|---|
| Waltham Forest | 55 | 55 | |
| Stoke-on-Trent | 56 | 54 | ▼ |
| Portsmouth | 50 | 54 | ▲ |
| Ealing | 54 | 53 | ▼ |
| Sandwell | 53 | 53 | |
| Leeds Council | 53 | 53 | |
| Barnet | 49 | 52 | ▲ |
| Redcar and Cleveland | 58 | 52 | ▼ |
| South Tyneside | 61 | 51 | ▼ |
| Solihull | 55 | 51 | ▼ |
| Thurrock | 51 | 51 | |
| Barking and Dagenham | 50 | 51 | ▲ |
| Walsall | 50 | 50 | |
| Havering | 52 | 49 | ▼ |
| Brighton and Hove | 50 | 49 | ▼ |
| Luton | 52 | 48 | ▼ |
| Sheffield | 48 | 48 | |
| Harrow | 52 | 47 | ▼ |
| Blackburn with Darwen | 58 | 47 | ▼ |
| Hillingdon | 51 | 47 | ▼ |
| Hackney | 47 | 46 | ▼ |
| Wolverhampton | 49 | 46 | ▼ |
| North Tyneside | 54 | 46 | ▼ |
| Hartlepool | 50 | 46 | ▼ |
| Sunderland | 44 | 46 | ▲ |
| Bradford | 34 | 46 | ▲ |
| Greenwich | 49 | 45 | ▼ |
| North East Lincolnshire | 43 | 45 | ▲ |
| Brent | 43 | 44 | ▲ |
| Hounslow | 58 | 44 | ▼ |
| Haringey | 47 | 44 | ▼ |
| Blackpool | 57 | 44 | ▼ |
| Leicester | 42 | 44 | ▲ |
| Dudley | 45 | 43 | ▼ |
| Middlesbrough | 43 | 43 | |
| Enfield | 42 | 43 | ▲ |
| Camden | 41 | 42 | ▼ |
| Stockton-on-Tees | 38 | 41 | ▲ |
| Kirklees | 45 | 40 | ▲ |
| Newcastle-upon-Tyne | 43 | 40 | ▼ |
| Redbridge | 41 | 40 | ▼ |
| Islington | 41 | 37 | ▼ |
| Coventry | 36 | 37 | ▲ |
| Westminster | 36 | 37 | ▲ |
| Western Riverside | 34 | 34 | |
| Slough | 40 | 33 | ▼ |
| Tower Hamlets | 32 | 33 | ▲ |
| Nottingham | 34 | 32 | ▼ |
| Birmingham | 39 | 30 | ▼ |
| Newham | 32 | 30 | ▼ |
| Southwark | 29 | 30 | ▲ |
| Lewisham | 26 | 25 | ▼ |

# Results for England Using the ONS 2001 Area Classification

A number of geographic and social factors may influence the recycling performance of local authorities. For this reason, we have also ranked English authorities according to their super group classification in the 2001 National Statistics Area Classification. This allows authorities to compare their indicator score against others with similar geo-demographic characteristics, giving a fairer measure of their performance against that of their peers.

## Prospering UK

- Cheshire West and Chester
- Gloucestershire
- Bexley
- North Somerset
- Somerset
- South Gloucestershire
- Buckinghamshire
- Bath and North East Somerset
- Hampshire
- Cheltenham
- Rutland
- East Riding of Yorkshire
- Northamptonshire
- West Sussex
- Oxfordshire
- Worcestershire
- Cambridgeshire
- Wokingham
- Milton Keynes
- Suffolk
- Surrey
- Herefordshire
- Essex
- Wiltshire
- West Berkshire
- Swindon
- Kent
- Poole Borough
- Cheshire East
- Shropshire
- Central Bedfordshire
- East Sussex
- Bracknell Forest
- Hertfordshire
- York
- Norfolk
- Lancashire
- Northumberland
- Leicestershire
- Warwickshire
- Lincolnshire
- Warrington
- Medway
- Peterborough
- Windsor and Maidenhead
- Bedford
- Solihull
- Thurrock
- Havering

## Cities & Services

- Richmond upon Thames
- Kingston upon Thames
- Bristol
- Calderdale
- Bromley
- Greater Manchester
- Plymouth
- Southend-on-Sea
- Bournemouth
- Reading
- Sutton
- Southampton
- Derby
- Portsmouth
- Sandwell
- Leeds Council
- Barking and Dagenham
- Walsall
- Brighton and Hove
- Sheffield
- Blackburn with Darwen
- Hillingdon
- Wolverhampton
- Bradford
- Leicester
- Kirklees
- Newcastle-upon-Tyne
- Coventry
- Nottingham
- Birmingham

## London Centre

- City of London
- Hackney
- Brent
- Haringey
- Camden
- Islington
- Westminster
- Western Riverside
- Tower Hamlets
- Newham
- Southwark
- Lewisham

## Mining & Manufacturing

- Wigan
- North Lincolnshire
- Telford and Wrekin
- Darlington
- Doncaster
- Derbyshire
- County Durham
- Nottinghamshire
- Halton
- Staffordshire
- Merseyside
- Kingston-upon-Hull
- Wakefield
- Gateshead
- Barnsley
- Rotherham
- Stoke-on-Trent
- Redcar and Cleveland
- South Tyneside
- North Tyneside
- Hartlepool
- Sunderland
- North East Lincolnshire
- Dudley
- Middlesbrough
- Stockton-on-Tees

## London Suburbs

- Merton
- Croydon
- Waltham Forest
- Ealing
- Barnet
- Luton
- Harrow
- Greenwich
- Hounslow
- Enfield
- Redbridge
- Slough

## Coast & Country

- Dorset Waste Partnership
- Devon
- North Yorkshire
- Torbay
- Isle of Wight
- Cumbria
- Cornwall
- Blackpool

# Northern Ireland & Wales Recycling Carbon Index

All local authorities in Wales and Northern Ireland are unitary authorities, with the powers of both a Waste Collection Authority and a Waste Disposal Authority. In the tables below, authorities have been grouped by their relative performance in the Recycling Carbon Index. In both countries, most authorities improved their overall performance in 2017/18, with all but two Northern Irish authorities showing an increase. Antrim and Newtownabbey became the first Northern Irish authority ever to reach the "High Flyer" rank in the Index.

## Northern Ireland Authorities Index

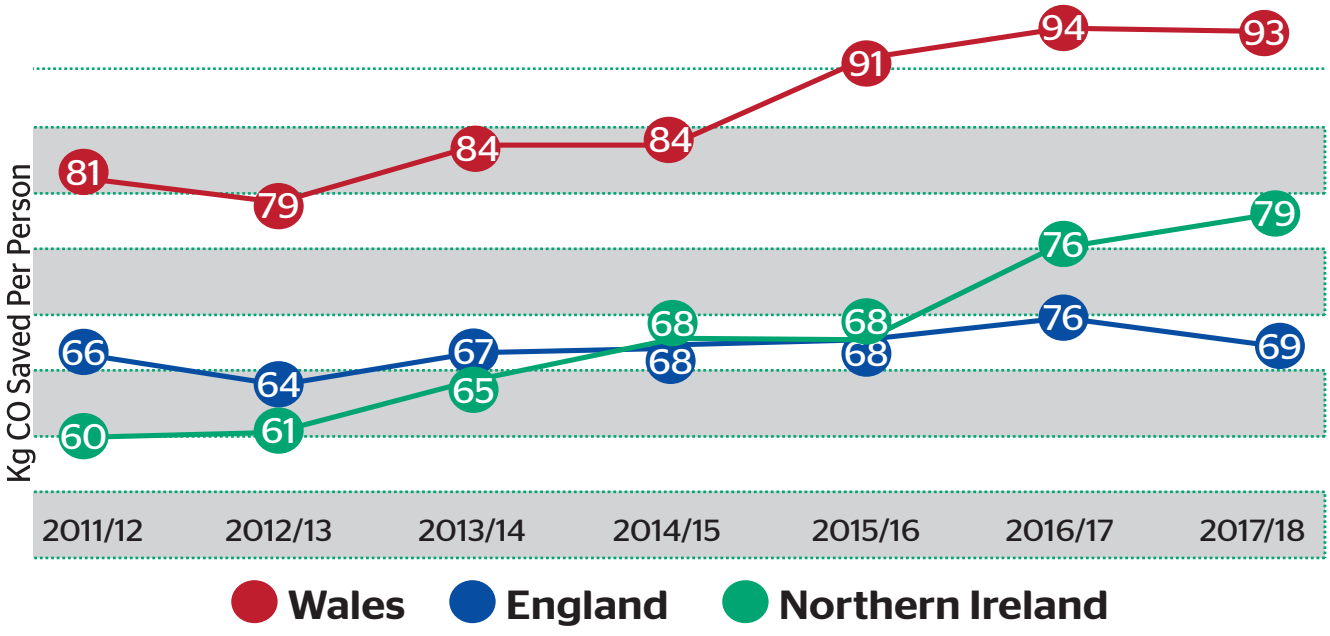
| | 16/17 | 17/18 | |
|---|---|---|---|
| Antrim and Newtownabbey | 93 | **98** | ▲ |
| Mid Ulster | 83 | **85** | ▲ |
| Belfast | 80 | **84** | ▲ |
| Derry City and Strabane | 74 | **82** | ▲ |
| Fermanagh and Omagh | 83 | **82** | ▼ |
| Ards and North Down | 83 | **82** | ▼ |
| Mid and East Antrim | 78 | **82** | ▲ |
| Causeway Coast and Glens | 73 | **72** | ▼ |
| Lisburn & Castlereagh | 65 | **69** | ▲ |
| Armagh City, Banbridge & Craigavon | 62 | **68** | ▲ |
| Newry, Mourne and Down | 61 | **66** | ▲ |

## Wales Authorities Index

| | 16/17 | 17/18 | |
|---|---|---|---|
| Merthyr Tydfil | 104 | **117** | ▲ |
| Bridgend | 95 | **114** | ▲ |
| Isle of Anglesey | 108 | **113** | ▲ |
| Neath Port Talbot | 107 | **110** | ▲ |
| Torfaen | 109 | **110** | ▲ |
| Flintshire | 101 | **104** | ▲ |
| Conwy | 107 | **102** | ▼ |
| Carmarthenshire | 99 | **100** | ▲ |
| Rhondda Cynon Taff | 99 | **98** | ▼ |
| Ceredigion | 104 | **98** | ▼ |
| Wrexham | 101 | **98** | ▼ |
| Newport City | 94 | **97** | ▲ |
| Denbighshire | 100 | **96** | ▼ |
| Gwynedd | 99 | **95** | ▼ |
| Pembrokeshire | 96 | **94** | ▼ |
| Powys | 118 | **92** | ▼ |
| Monmouthshire | 96 | **90** | ▼ |
| Swansea | 86 | **88** | ▲ |
| Vale of Glamorgan | 83 | **87** | ▲ |
| Caerphilly | 85 | **85** | |
| Blaenau Gwent | 73 | **78** | ▲ |
| Cardiff | 62 | **61** | ▼ |

Welsh and Northern Irish authorities collected very similar amounts of recycling per capita - 200kg and 197kg respectively. However, in Wales, a greater share of this material is dry recycling rather than organics, resulting in considerably greater emissions savings.

## Statistical Changes



## Further Work

Our intention in publishing this work free of charge is to help local authorities and their service providers to think about the environmental performance of the services they provide.

This report presents a high-level view of the underlying analysis. More detailed outputs can be provided quickly and at low cost for an individual authority or group of authorities. Our modelling allows us to look at the environmental performance of current and possible future services for both collection and disposal authorities and at the environmental impacts of collection, treatment and disposal.

**www.eunomia.co.uk/carbonindex**

## Want to Know More?

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