

West Midlands State of the Environment

Climate change

The earth's climate is complex and subject to many natural variations. However, the majority of climate research now supports the fact that human activity is influencing the earth's climate, causing it to warm. Man-made climate change is caused by the release of greenhouse gases (mainly through burning fossil fuels), deforestation and changes in land use. Even a small rise of a few degrees Celsius in average global temperatures could have devastating affects on society, habitats and species around the world.

The rate and severity of climate change will depend on many things, but reducing emissions of greenhouse gases is a priority. The UK has agreed to reduce emissions by at least 80 per cent by 2050 from 1990 levels. Between 1990 and 2008 the UK reduced emissions by 20 per cent so there is a long way to go.

The UK Climate Impacts Programme (UKCIP) is the UK's leading authority on climate change modelling. Although it is not possible to predict exactly how the West Midlands climate will change in the future, they have produced models which show that we should expect hotter drier summers and warmer wetter winters. Extreme weather events such as flooding and dry spells may also become more common.

No matter what we do in the short term, some climate change is thought to be inevitable due to the greenhouse gases that have already been released. Therefore helping people and wildlife adapt to climate change is one of the Environment Agency's priorities.

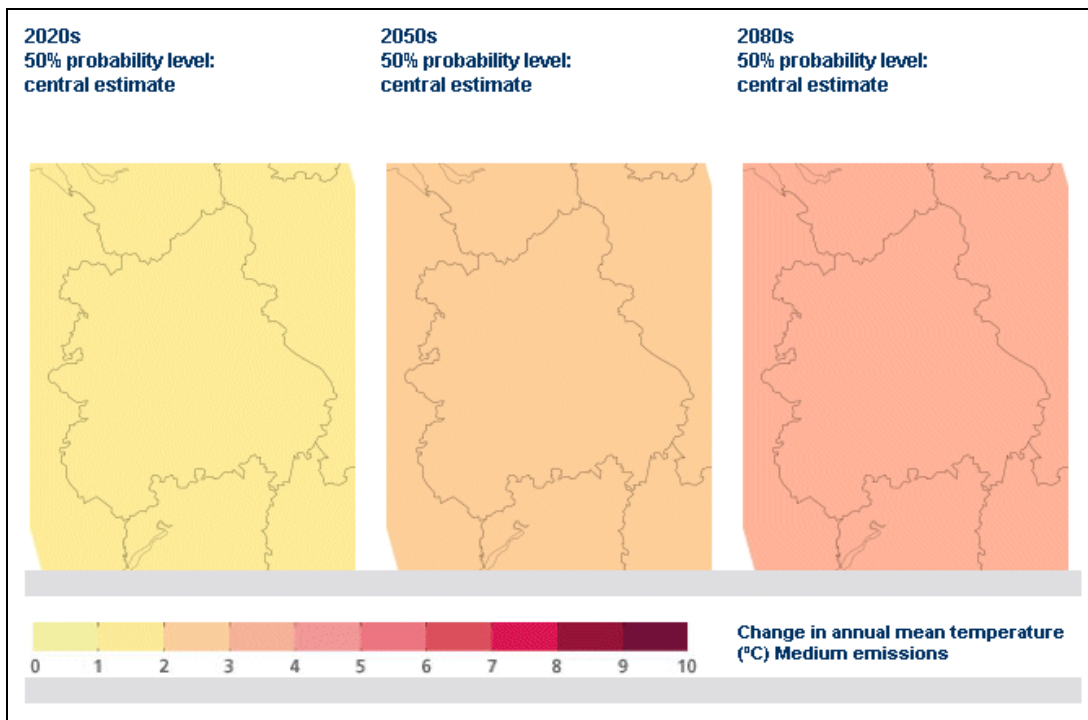
At a glance

- According to UKCIP, mean summer temperatures could rise by 2.6°C, summer rainfall could decrease by 17 per cent and winter rainfall could increase by 13 per cent in the West Midlands by the 2050s. These are the central estimates for a medium emissions scenario.
- By the 2050s central England could have irrigation needs similar to those currently seen in central and southern Europe. Mean monthly river flows could decrease by 50 to 80 per cent.
- In 2007, on average, each person in the West Midlands was responsible for the emission of 8.2 tonnes of CO₂ in 2007 (this excludes emissions from air and marine transport, offshore emissions and direct emissions from waste), compared to a UK average of 8.4 tonnes.
- In 2008, 697 Gigawatt Hours (GW h) of renewable energy was generated in the West Midlands. The UK as a whole generated 21,578 GW h and the English region with the highest amount was East of England with 2,164 GW h.

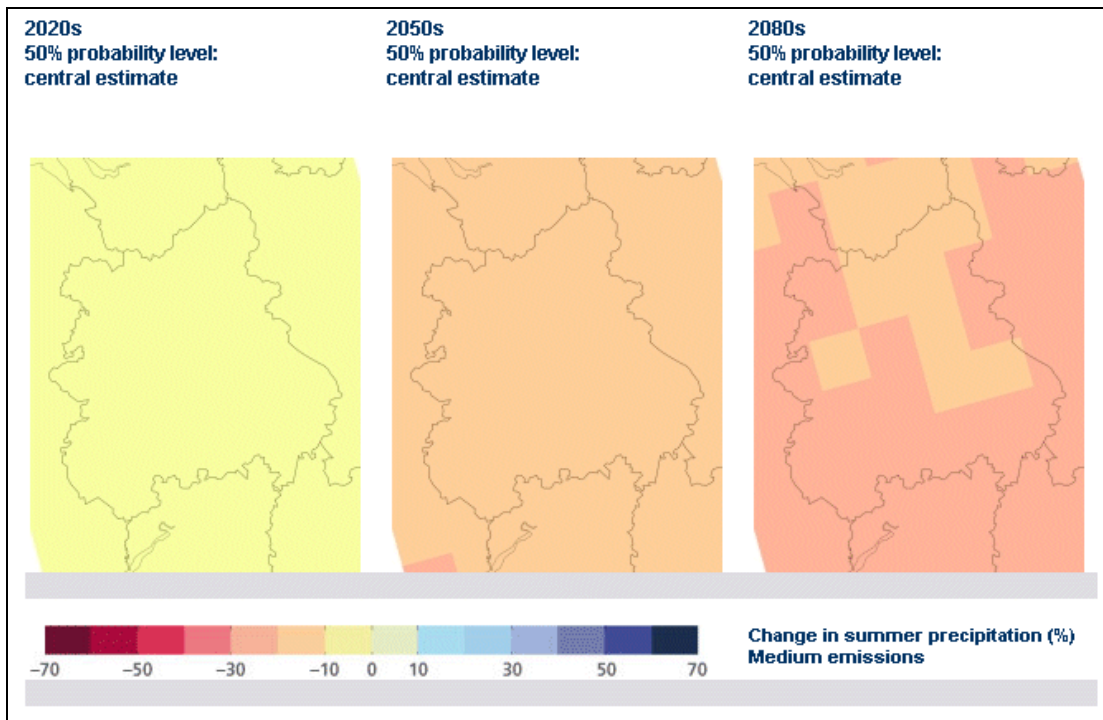
- Around 10,000 homes are at significant risk of flooding in the West Midlands (equivalent to a 1 in 75 year risk). This is based on the 2008 NaFRA dataset which looks at flooding from rivers and the sea and takes into account flood defences.
- A 2010 Environment Agency project found that there are 2,300 potential river sites in the West Midlands that could provide hydropower. However, ecological sensitivities mean that only 147 sites could realistically be developed with a capacity of 32 Mega Watts (MW).

Data and Trends

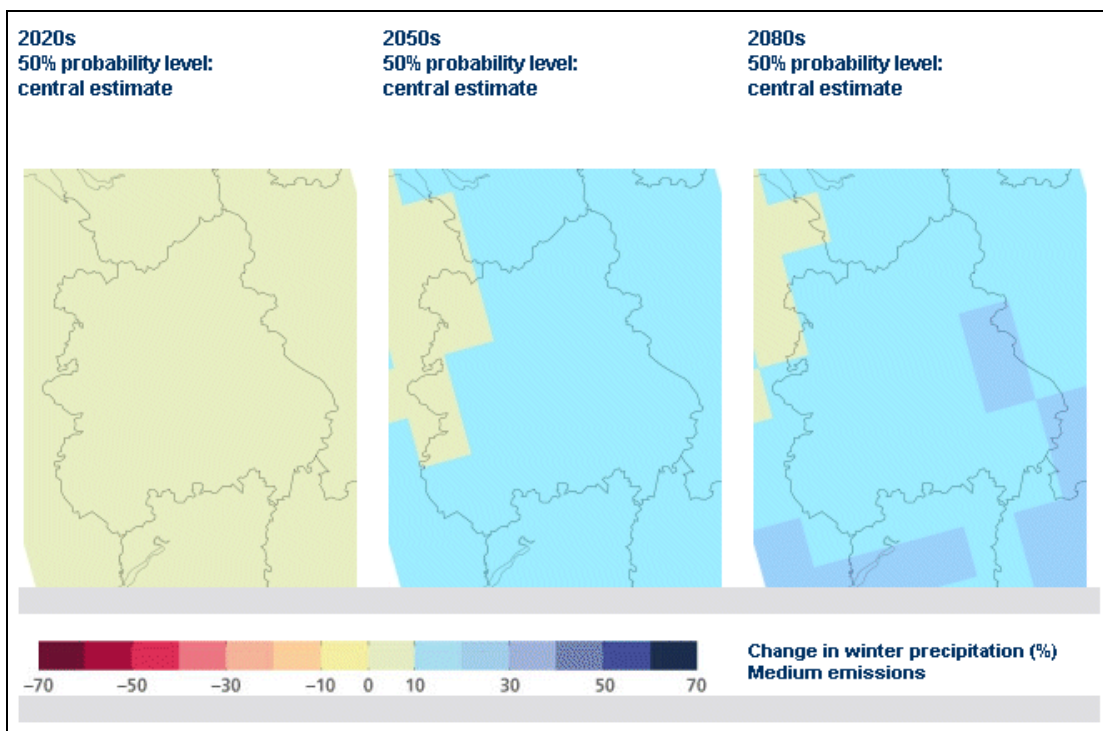
The maps below show the medium probability models predicting changes to the mean temperature, summer and winter rainfall for the West Midlands produced by the UKCIP. Models were based on a medium emissions scenario and give results projected to the 2020s, 2050s and 2080s.



Source: UKCP09

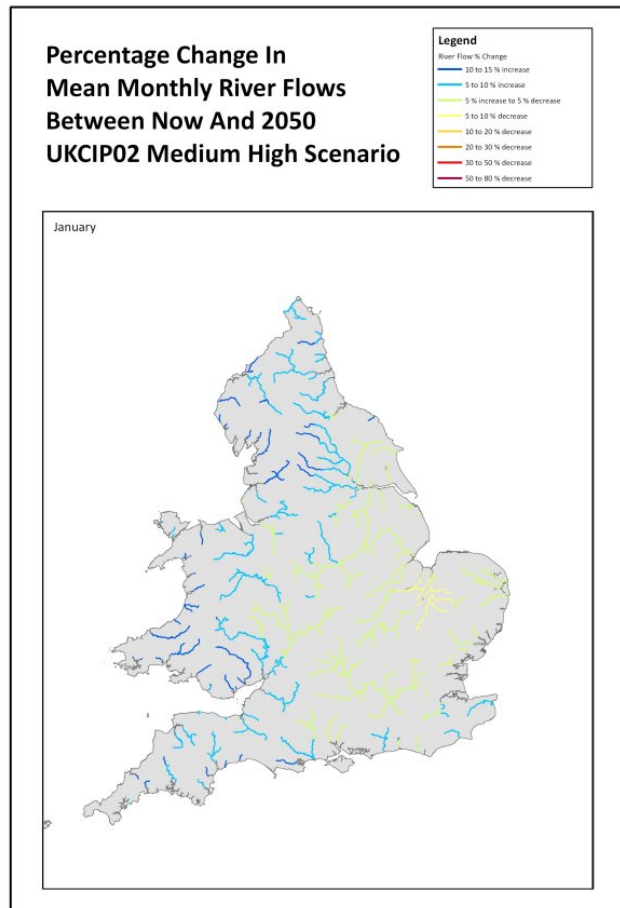
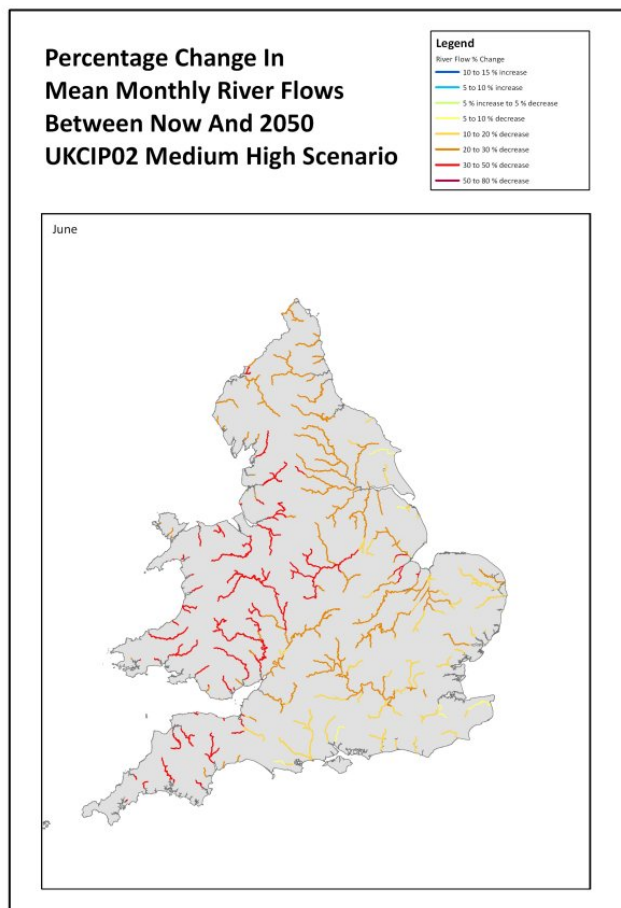


Source: UKCP09

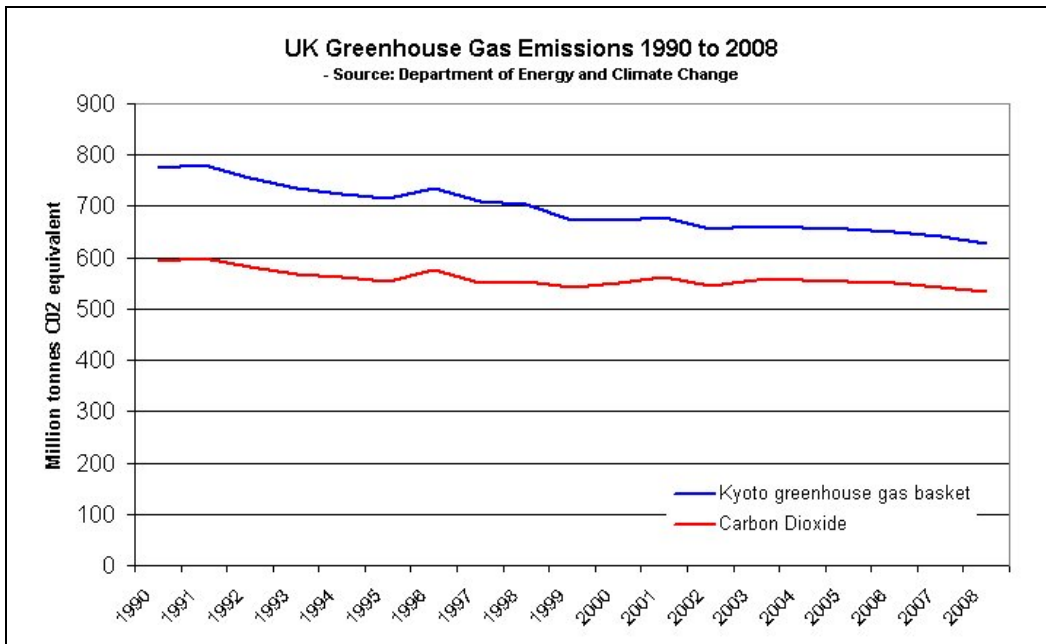


Source: UKCP09

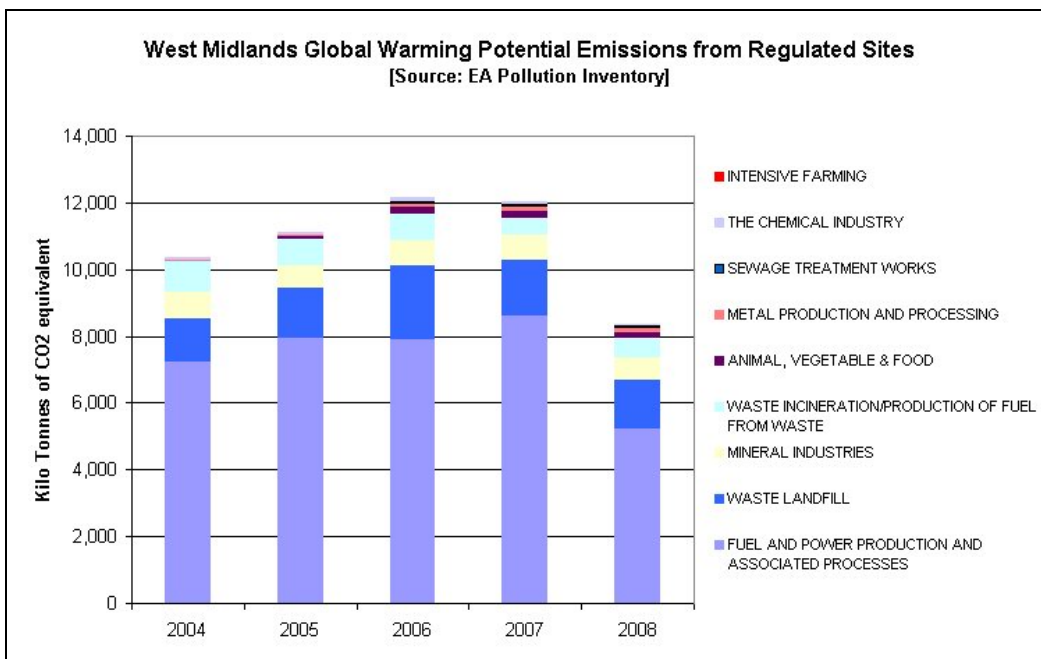
Predicted changes in average monthly river flows by the 2050s in a summer month and a winter month are shown in the two following maps. The full dataset for every month was produced by the Environment Agency in 2009 using the 2002 UKCIP data.



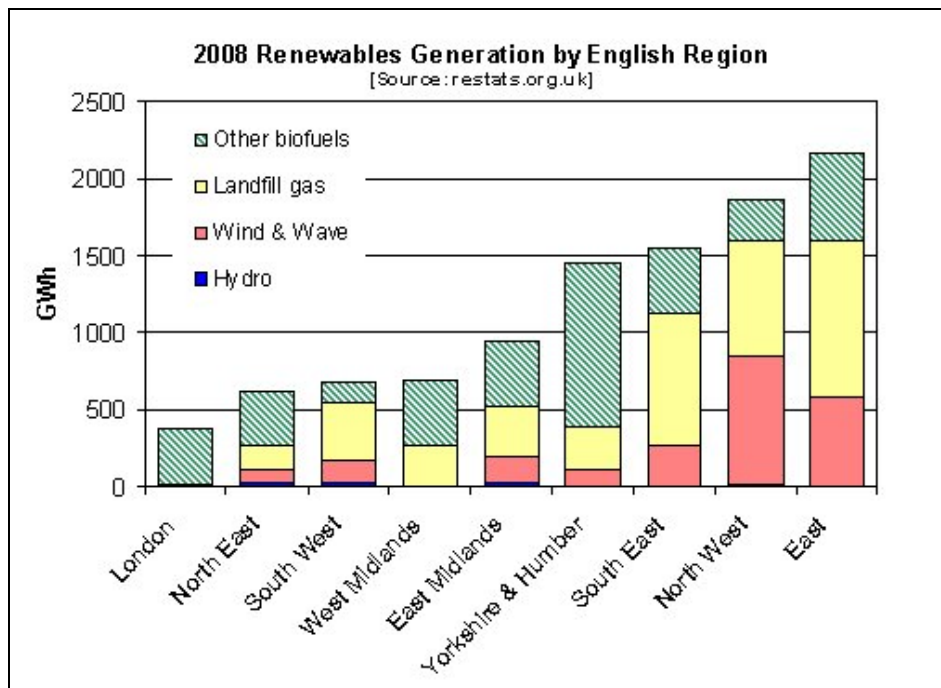
The Department of Energy and Climate Change (DECC) collate UK greenhouse gas emissions data and the most recent published figures are shown below. The graph shows a slight downward trend in overall greenhouse gases and carbon dioxide emissions since 1990.



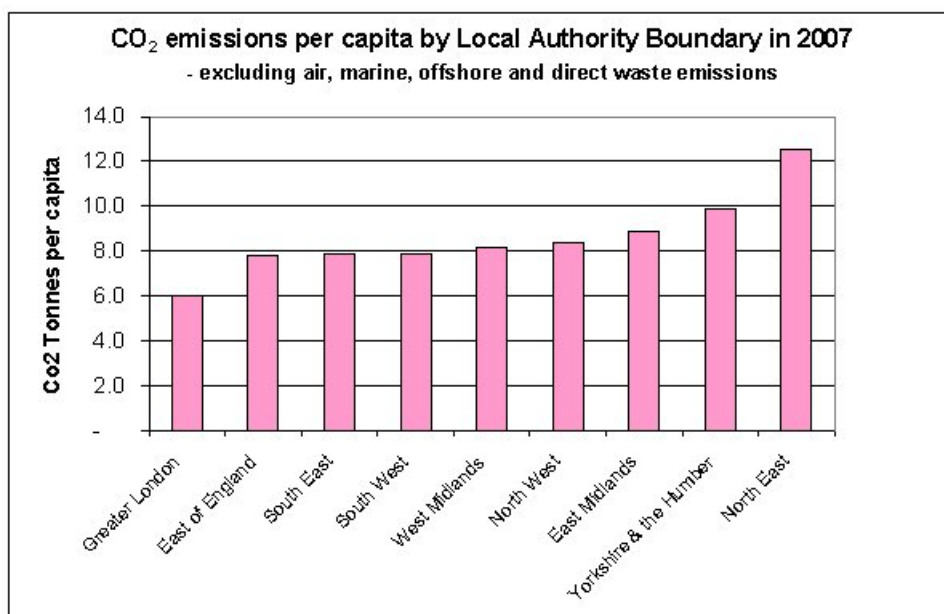
The Environment Agency receives annual emissions data from eligible regulated industrial sites. The Global Warming Potential (GWP) of the basket of six Kyoto greenhouse gases is calculated from this data to give a figure for kilogrammes of carbon dioxide equivalent for each site. The chart below shows emissions since 2004. The considerable drop in emissions from the power sector in 2008 can be explained in part by fuel prices making it less profitable to run certain plants which subsequently reduced output. It was also partly because one large plant was temporarily shut down during major works.



Restats.org.uk publish annual figures for renewable capacity and generation in the UK regions. The figures below show that the West Midlands generated the fourth lowest amount of renewable energy of the English regions. Output was from biofuels and landfill gas only.

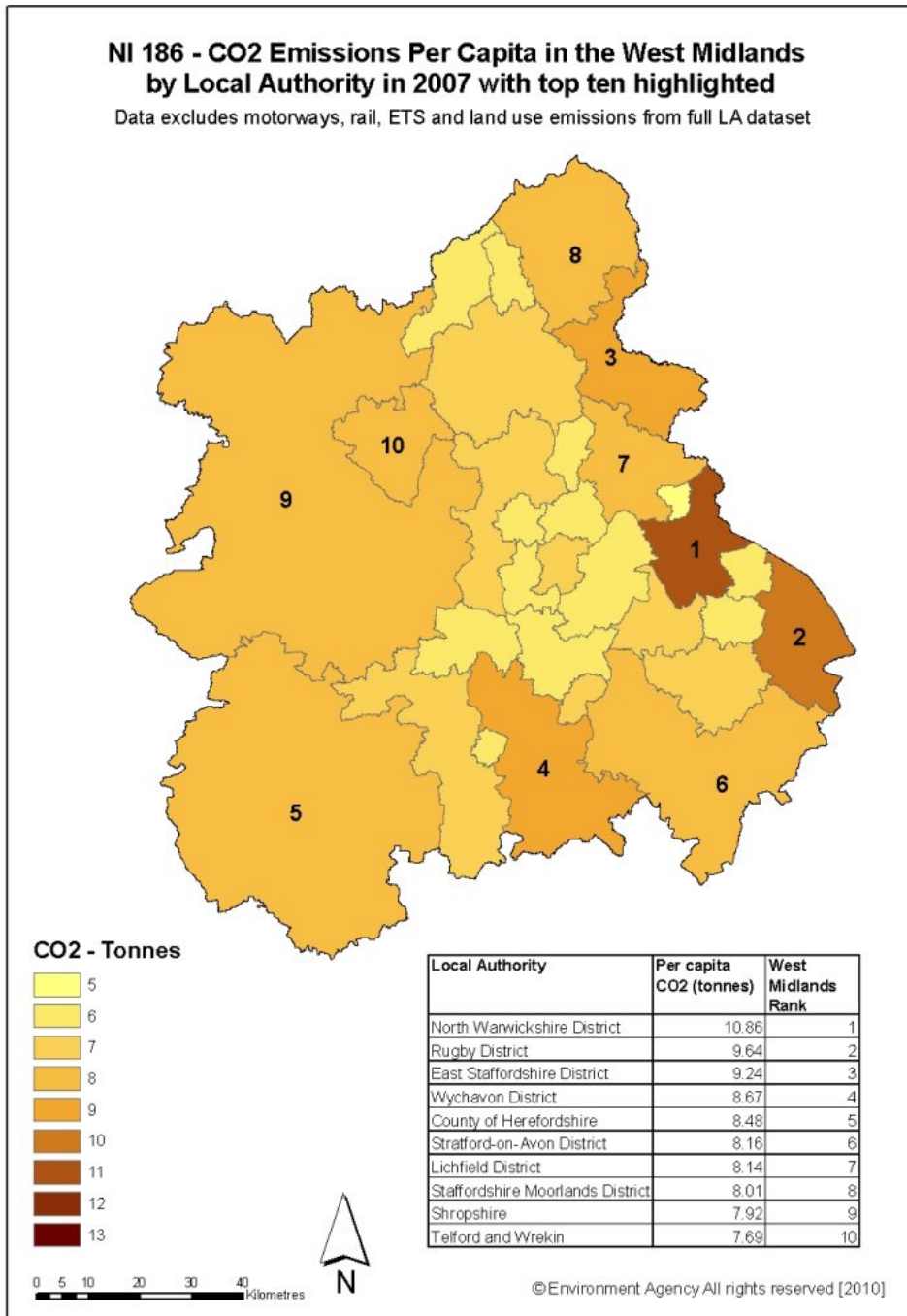


Each year DECC releases many datasets. One is the full dataset of CO2 emissions by local authority area. This includes all emissions with the following exclusions: air and marine transport, offshore emissions from imported goods and direct waste emissions. The following chart shows the 2007 dataset.



Another dataset which DECC releases is called the 'National Indicator 186' dataset. This is used by government to track 'per capita reductions in CO2 emissions in each local authority area'.

This uses a subset of the dataset described above. Emissions from some additional sources are excluded because they are considered to be beyond a local authority's control e.g. motorways, rail, Emissions Trading Scheme (ETS) emission and land use. The map below shows the 2007 National Indicator 186 dataset highlighting the local authorities with the top ten highest per capita emissions in the West Midlands.



Our role

We have a key role to play in avoiding and responding to climate change. By 2015 we will regulate around half the greenhouse gas emissions in England and Wales. We are also an influential advisor to businesses and communities on the causes and consequences of climate change. We will also continue to reduce the emissions of our own operations.

In the coming years we will ensure that:

- Methane and carbon dioxide emissions from landfill sites are reduced.
- More energy in the West Midlands is produced from renewable sources.
- Organisations reduce their carbon impacts and increase their climate change resilience.
- Carbon storage in soils and standing biomass is increased.
- We are leaders in responding to the causes and consequences of climate change in the West Midlands.
- We reduce our environmental impact, comply with regulations and manage procurement in a sustainable and ethical manner.