

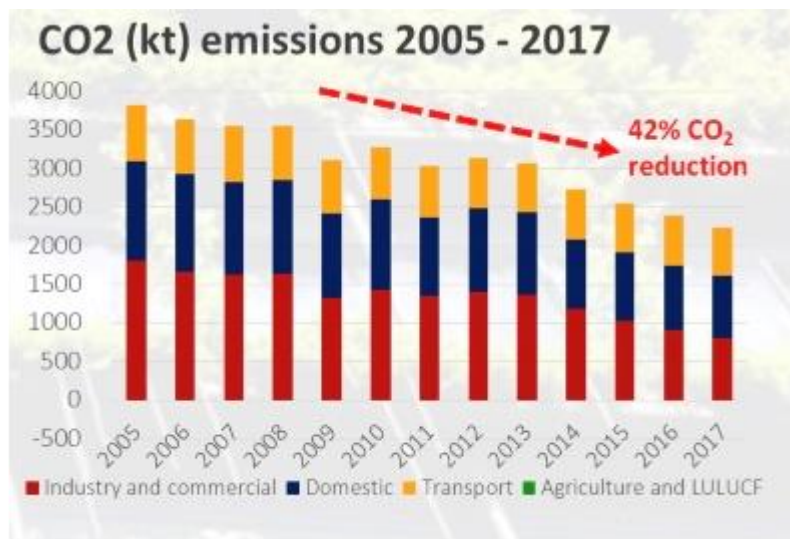
10 Point Plan for climate action

A summary of our evidenced ambition



The impact of our city on the climate

The Pathways to Decarbonisation report, commissioned in 2020, gives us a detailed understanding of Sheffield's greenhouse gas emissions. The report means that we fully understand where our emissions come from and how they have changed since 2005.

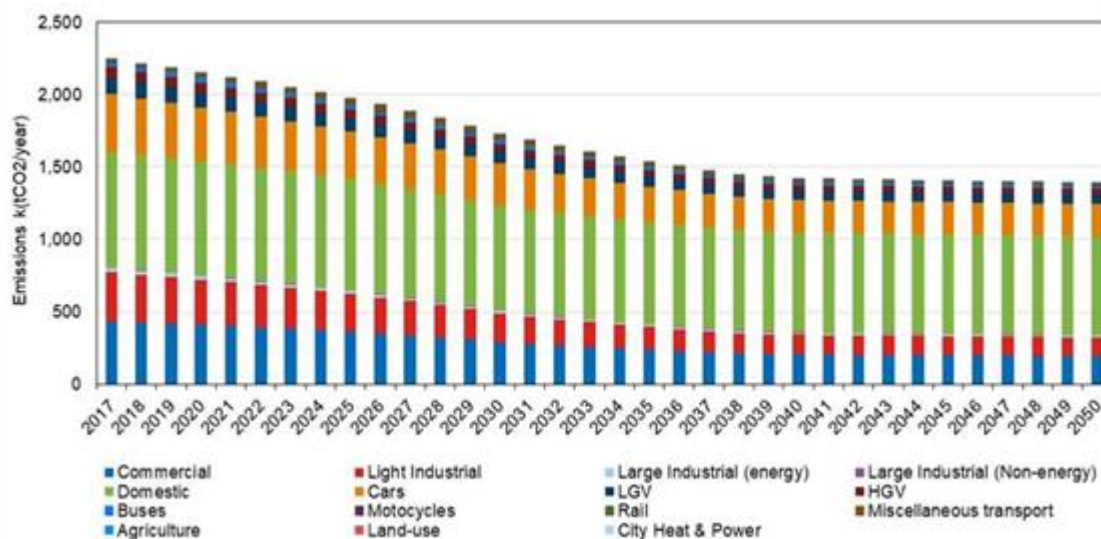


It can be seen here that there has been a 42% reduction in carbon emissions since 2005 across the key emissions sectors of industry and commercial, domestic, transport and agriculture and Land Use Land Use Change and Forestry (LULUCF). Much of the reduction in Sheffield and elsewhere is the result of electricity decarbonising, changes of fuel industry, improvements in technology and energy efficiency of appliances and machinery. Emissions from our transport remain little changed from 2005. This is the case in most cities across the country.

In practical terms, this means that whilst there has been progress, and some of this has

been the result of local action, the vast majority of the “easy” reductions have already been achieved.

Our analysis also shows us what our emissions might look like if we implement all current national and local policy changes.



It is clear here that, based on the current situation, our city's emissions would still not even be halved by 2050. Business and industry reduce significantly over time, although still nowhere near enough, but the emissions produced by our homes and by transport change relatively little (despite the forecast including any new homes being built to the planned Future Homes Standard and the proposed ban on new diesel and petrol vehicles).

Our focus as a city needs to be particularly on reducing emissions from our homes, from the way we travel, from our business and commercial sectors and from our land



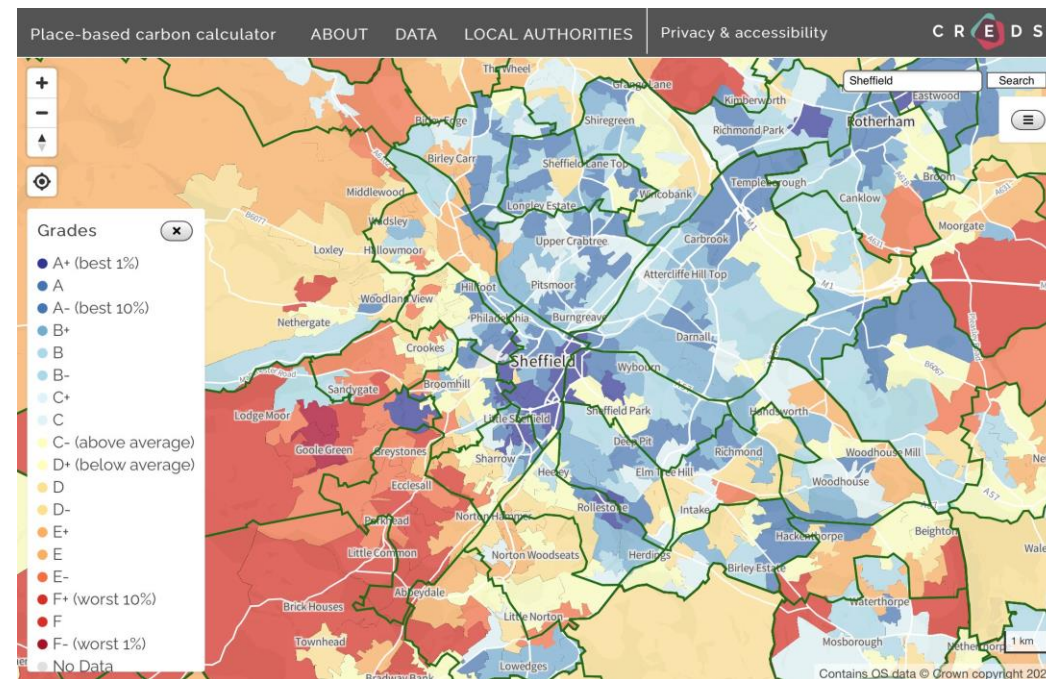
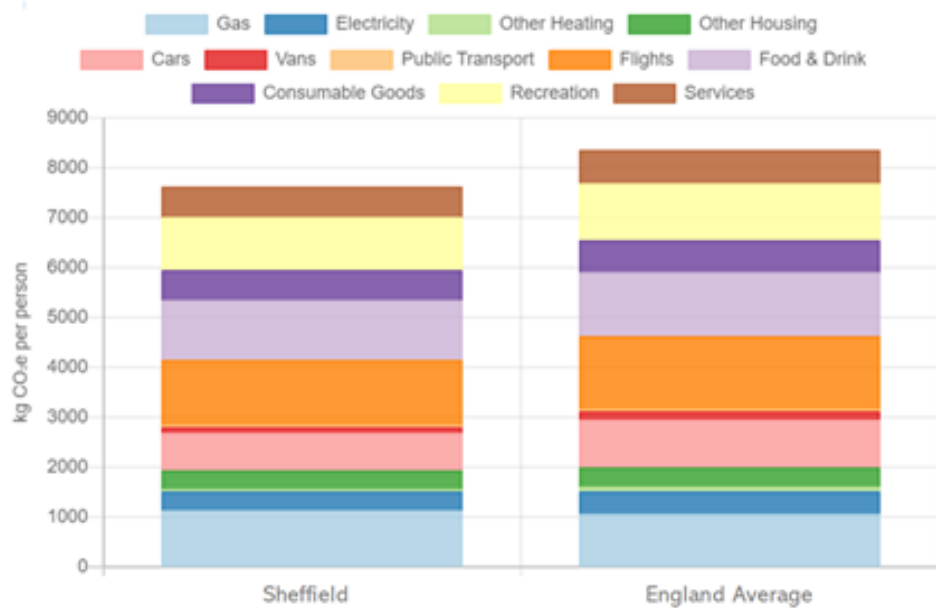
The impact of our city on the climate

The Pathways to Decarbonisation work covers what is known as Scope 1 and 2 emissions, which are the emissions related to the energy that we generate or use directly, but doesn't include what are called Scope 3 emissions which include the emissions generated from the things we consume, the waste we generate and non-local travel including flights. Researchers at the Centre for Research into Energy Demand Solutions (CREDS) have developed a [place based carbon calculator](#) which gives a total carbon footprint for local authorities and political wards, including some of these aspects and we can see a more rounded picture of Sheffield's carbon footprint through this.

The council has less direct influence in addressing these emissions, but we take very seriously our role to communicate, convene and support individuals and businesses to act.

Using this analysis, we can also see that the emissions that we produce are not spread equally across the city. There is a clear and direct correlation between carbon emissions and affluence and disposable income, and particularly how that disposable income is spent. Someone who flies regularly and drives a large diesel or petrol fuelled vehicle and lives in a large and uninsulated house will produce many more carbon emissions than someone who lives in a small home, travels largely by bus, walking or cycling and takes holidays in the UK or travelling by train.

Our role as a council is to reduce our own emissions and to do what we can to enable change across the city. This includes providing information and making the actions that will benefit our city easier to make. Beyond this, each of us as individuals has our own choices to make about how we act.





The impact of the climate crisis on Sheffield

From Covid to the climate crisis

We have experienced, and are still experiencing, what the impact of a global crisis can do to our city. Covid 19 has been a very acute crisis which came seemingly out of the blue to many of us, but has been a present danger to our public health teams, and something that we prepared for. This preparation has been vital to enable us to react quickly, and we have pulled together as a council and as a city to minimise the impact. This has meant acting swiftly to make previously unimaginable changes, working in different ways and building new relationships. These responses will help us to conquer the next battle that we face.

The climate crisis can feel more distant, but its impact is predicted to outweigh that of covid. It is a gradual crisis, which makes it harder to recognise, accept and respond to. This means it would be easy to wait until it is too late to act. **We need to act now to help keep climate changes to a minimum, as well as to adapt to the inevitable changes.**

The UK, and the rest of the world, is currently not on target to keep the temperature change to 1.5°C. We need to do our part to minimise the increase. However, Sheffield will still experience increasing impacts of climate change.

The changes in climate will have impacts across many aspects of our lives in Sheffield including:

- Wetter winters and more intense rainfall events throughout the year may result in higher risks of flooding. This may result in a high amount of surface water, exceeding the capacity of drainage systems, and leading to more frequent and severe localised flash flooding
- Warmer and drier summers may affect quantity and quality of food and water supply, as well as damage to buildings and infrastructure

- Changing climate will hugely impact the natural ecosystems and biodiversity.
- Energy demand is set to increase with population rise, therefore as fossil fuels are a finite resource, they will slowly become diminished, unless we see a drastic shift to renewable energy and increased energy efficiency. This is likely to create price increases.

These changes have will impacts for people and businesses including:

- An increase in heat related illnesses and reduced wellbeing during extreme weather, as well as loss of life,
- Increased costs for food, utilities and other goods and services, including increases in insurance premiums and from damage to homes and property,
- Costs to business of disruption in trading, lower worker productivity and reduced customer numbers during extreme weather periods.
- As with Covid 19, those already living in poverty or in deprived communities will be most affected.

These impacts will be very significant for the city. Residents, communities and businesses will need to adapt and respond to a changing climate. However, many of the actions that we take to reduce our emissions will also have the benefit of mitigating the impacts:

- Ensuring our buildings are well insulated will protect people from increases in summer heat
- Generating our own renewable energy can protect us from energy shortages and increases in energy costs,
- Reducing petrol and diesel fuelled vehicles will improve air quality and make breathing easier, particularly in hot conditions; and
- Growing more of our own food locally and sustainably will protect us from shortages and price increases.



The way we travel

Where we are now

In 2017 the emissions from the transport sector contributed 642 ktCO₂ to our city's emissions – 26% . Almost two-thirds of these emissions are from cars and over a quarter from light and heavy goods vehicles (LGVs and HGVs). 60% of people journeys are made by car, and around 40% of our car trips are less than 1km in distance (a 10 to 12 minute walk). Long term public transport decline has been exacerbated by Covid.

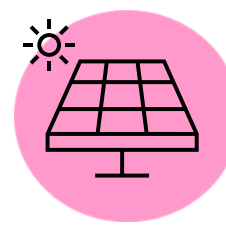
In 2019, 98% of the vehicles in the city were either diesel or petrol, with the vast majority of these being diesel. Around 2% of our vehicles are electric, with none of our buses being electric, and 75 public electric vehicle (EV) chargers exist around the city.

The way we travel does not just contribute to our carbon emissions. Air pollution contributes to 500 deaths a year causing strokes, lung cancer and cardiovascular disease. The biggest cause of pollution is transport, especially diesel vehicles.

What needs to change

Our analysis shows that:

- Car use needs to reduce by 66% by 2030.
- We need to use our planning powers and have both physical and digital infrastructure and inclusion levels that create a city which reduces reliance on cars and on travel. Sheffield should aim to have 80% of journeys made by public transport, cycling and walking by 2030.
- All vehicles will need to be decarbonised, switching to electric or hydrogen.
- We need to consolidate freight to reduce the journeys making deliveries.
- Working with partners, particularly the South Yorkshire MCA will be crucial.



Energy generation and storage

Where we are now

Sheffield generates more renewable energy than other comparable cities, but has relatively low levels of solar, wind and hydroelectricity.

Approximately 151GWh of energy is currently generated from the city's biomass and energy from waste heating schemes (Sheffield's waste incinerator), an estimated 21GWh is generation from, largely solar installations by homes and businesses.

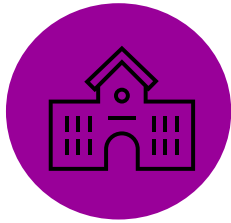
Our universities are at the forefront of renewable energy technology, and their progress means that even without subsidies, payback times for renewable energy are dropping.

What needs to change

Our analysis shows that:

- Fossil fuel heating systems will need to be replaced, either through connecting to low carbon heat networks or installing individual heat pumps
- Approximately 23,000 buildings should be connected to new heat networks
- Although hydrogen may play a significant role in heat decarbonisation, it is unlikely to be a viable wide-spread option before the 2030 target
- There is the potential to generate 518GWh of solar energy across 53,000 buildings, with a further 10% of domestic properties will be suitable for producing heat from solar power, generating around 39GWh of energy.
- Land in the city could generate over 750GWh of energy.

Increasing renewable energy, particularly community owned energy generation, can reduce fuel bills and keep money in the local economy.



Our Council

Where we are now

Sheffield City Council produces approximately 7% of the city's emissions, the large majority (almost 90%) of which come from our 38,000 homes (we own around 16% of the total number of homes in the city). We own over 4,000 land and property assets including our operational buildings, but also community buildings, industrial and retail units, agricultural land, allotments, and development sites, and in total own 5% of the land in the city. Many of our non-domestic buildings are not only inefficient in energy, but in a poor state of repair, and the maintenance and improvements bill already far outstrips the funding we have available. Improving the energy of our homes and buildings will be one of the biggest challenges that we face.

Around 3% of our annual emissions come from our own vehicles, with significant additional emissions coming from the vehicles that are owned by employees and driven during their work. Our current fleet replacement strategy aims to replace vehicles with electric or hydrogen where possible.

Our street lighting makes up around 3% of our emissions. As we have rolled out LED lighting, this is relatively low emission compared with much street lighting around the country.

What needs to change

Our analysis shows that:

- Our buildings will need to be upgraded with high standards of insulation, low energy and electrical appliances and heat pumps and heating and smart heating controls.
- We will need to replace our fleet with electric or hydrogen fuelled vehicles and reduce mileage
- We will need to increase our renewable energy generation
- We will need to increase the amount of trees and naturalistic management on our land



Our homes

Where we are now

Our city's homes are responsible for 33% of the city's direct and indirect carbon emissions. As a city, our homes are not energy efficient or fit for the climate that we will face in the coming years. In 2019 17.5% of our people were living in fuel poverty, and fuel prices are rising, and national research has shown that 20% of people living in rented homes experience negative physical and mental health due to cold and damp homes. 61% of the homes in the city are currently below EPC C.

Homes at levels F and G can currently not be legally rented out, with proposals from Government to increase this to EPC level C by the middle of the decade. Gas boilers are being phased out nationally, and gas prices are likely to increase further as more homes switch to electric.

What needs to change

Our analysis shows that:

- All new homes should be built to a zero carbon standard.
- All existing homes should be upgraded to as high a level as possible. This means that around 230,000 homes in the city will need upgrading with high standards of insulation, low energy and electrical appliances (including cookers) and heating and smart heating controls. Heating will need to be provided by heat pumps and increased connections to the district heating network.

A conservative capital only cost of upgrading the city's homes is estimated to be between £2bn and £5bn, or between £8,700 and £21,700 per home, although some of this will have short payback times. Increasing the energy efficiency of homes from D to B should save the average household around £500 per year, and improve living conditions, health and house values.



Our businesses and industries

Where we are now

Our analysis shows that in 2017 the emissions from the commercial and industry sector contributed 801ktCO₂, equivalent to 35% of Sheffield's emissions. Our analysis considered buildings and transport within Sheffield and found that energy used by businesses within commercial buildings accounted for 54% of these emissions, whilst that in industrial buildings accounted for 46%. 92% of EPCs for non-domestic buildings in the city are below level B, with 57% at D or below.

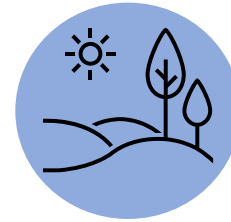
Within emissions from transport, light and heavy goods vehicles contribute approximately 184ktCO₂.

Some sectors are already making good progress, supported by innovation challenges and government funding, but the majority of the sector's emissions will come from SMEs based in retail, offices and workshops.

What needs to change

Business and industry will need to increase the energy efficiency of their processes, and materials will need to become more sustainable. The way that businesses travel and deliver their products will also need to decarbonise. Buildings will need improved insulation and more efficient appliances, as well as decarbonising heat including through increasing connections to the district heat network and the installation of heat pumps. There will be a need for new skills and new jobs, and opportunities for growth.

These changes are not unique to Sheffield. Investors and customers are increasingly looking for businesses to be able to demonstrate that they are working to improve their impact on the environment and the climate, and businesses that are taking action to reduce their emissions often see reductions in their costs and wastage. This trend is likely to continue and escalate in the coming years.



How we use our land

Where we are now

Sheffield is proud of being one of the most densely wooded cities in the country with over 18% tree canopy coverage across the city compared with 16% nationally. The city's trees, green spaces and moorland sequestered 21 ktCO₂ in 2017, an increase of 1kt since 2005.

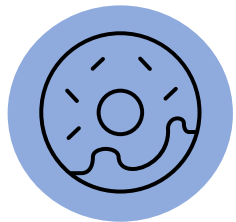
Emissions from our land are relatively small, but there are localised areas of high methane emissions in the rural areas of the city.

What needs to change

Carbon sequestration from land use generally takes time for plants and trees to mature, but our analysis suggests that a doubling of carbon sequestration may be achievable over time. The amount of carbon sequestered through land use is relatively small numerically – only 2.5% of the city's annual emissions - and action to increase this can realistically only have a small impact on our emissions.

However, protecting and improving our natural environment has a vast range of other benefits, enabling the city to adapt to climate change (including reducing flooding and reducing the risk of extreme heat, particularly in our built environment). In addition, our approach to our land use has impacts on biodiversity, on the health and wellbeing of our people and on the desirability of the city as a place to live and do business.

Our analysis suggests that doubling carbon sequestration could require an increase of around 4 million trees through planting or rewilding, and landscape scale peatland restoration.



What we own, eat and throw away

What we own

The things that we buy and own, and the way we spend our leisure time, all has an impact on our emissions. For some of us, these emissions can be our most significant. We each have our own choices to make about the way we live our lives and how we spend our money, but there is an increasing recognition that reducing our consumption, and in particular the consumption of single use items, will be needed to reduce our carbon emissions.

The food we eat

The food and drink that we consume every day contributes a large percentage of our personal carbon footprints and is one of the easiest and cheapest ways that we can personally make a difference (particularly by reducing the amount of meat and dairy, particularly red meat, that we eat, the food we waste and how we cook). The way our food is grown and reaches our plate (so the amount of processing, packaging, the distance it travels) also makes a significant impact.

As much of an issue is the food that we don't eat. Food is wasted at every stage of the system – with 68kg of food wasted at home per person each year. At the same time, there are large numbers of people in our city who go hungry.

What needs to change

It is not the role of the council to tell people what they should buy or eat, but it is widely accepted that we need to change the way we eat and consume. Changing our diets to include more plant based foods can be much healthier and cheaper, and buying less and more sustainable products can save us money, as can growing our own food.

There is a growing industry of sustainable food, with Sheffield's Institute for Sustainable Food at the forefront of technology, and growing more of our food locally using nature friendly methods can increase our food security as well as reducing emissions.

Our waste

Sheffield has one of the lowest rates of waste going to landfill in the country (less than 1%) as our waste fuels our district heating system, generating heat for many of our public buildings, businesses and homes. We had one of the first district heating systems in the country, and district heating is one of the ways that can help us to reduce our carbon emissions.

However, we know that we can still retain more value from the waste that we generate, including minimising the amount of waste we create in the first instance, but also through reuse and recycling, where the materials are used again. This reduces the need for new material extraction and manufacturing processes which can be hugely resource intensive.

What needs to change

- The Environment Bill, with new waste prevention, extended producer responsibility, deposit return scheme and consistency in collection measures, will mean that producers of waste will be incentivised to make more easily recycled materials, and local authorities will collect the same materials for recycling (including food waste).
- We will need to modernise our household waste facilities to make it easier for people and businesses to do what is needed.
- We will work with Veolia explore ways to further decarbonise the Waste Recovery Facility