ROTHER CLIMATE ACTION

Appendix A

Rother District Emissions Report - 2021

Summary

This report presents the latest data on District-wide, territorial greenhouse gas emissions (GHG) for 2005 - 2021, issued by the Department for Energy Security and Net Zero (DESNEZ) in June 2023.

In 2021 Rother's territorial greenhouse gas emissions were 472.6 kilotonnes CO2 equivalent (ktCO2e), up 15% on 2020 and 4% on 2019.

Transport was the largest emitting sector, responsible for 30% of emissions in 2021.

The domestic sector was responsible for 29% of emissions and the industrial sector was responsible for 22%.

Most sectors saw a rise in emissions from 2020 to 2021, largely due to the COVID-19 restrictions easing and more heating use due to colder weather. This is consistent with the national picture.

Unlike the national picture, emissions from the industry, commercial, and public sectors have increased above 2019 levels. The increase in the domestic sector above 2019 levels is smaller than the national increase.

Emissions from industry saw the greatest increase above 2019 levels. This has been queried with the Department for Energy Security and Net Zero (DESNEZ) data team as the reasons are unclear.

Introduction

This report presents the latest data on District-wide, territorial GHG emissions for 2005 - 2021, issued by DESNEZ in June 2023.

This is the second time all GHG emissions have been reported with figures for carbon dioxide emissions only available prior to June 2022.

The data provided uses nationally available datasets and provides the most reliable and consistent breakdown of GHG emissions. They cover territorial emissions of carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). Fluorinated gases are not included in regional breakdowns, though they are included in the UK territorial GHG emissions national statistics. The Technical Report provides the full methodology and dataset.

Background

In 2019, the Council declared a Climate Emergency and pledged to do all that was within its powers to become carbon neutral in Council operations and as a District by 2030.

The government publishes data each year on GHG emissions for each local authority in the UK from a range of sectors including Domestic, Transport, Industry, Commercial, Public

Sector, Land Use, Land Use Change and Forestry (LULUCF), Agriculture, and Waste Management.

The data shows 'territorial' emissions, meaning emissions that occur within the UK's borders. The emissions are allocated on an 'end-user' basis meaning emissions are distributed according to the point of energy consumption as opposed to where it is generated. Emissions from the production of goods are assigned to where the goods are produced rather than consumed. Emissions from the production of goods which are imported are excluded.

This report uses the 'full' DESNEZ dataset. This excludes the following types of emissions:

The following types of emissions are excluded:

- aviation, offshore industry, shipping, and military transport, because they cannot be allocated to local areas in a practical way.
- emissions from goods manufactured abroad but consumed in the UK, known as 'embedded' emissions, as there is currently no means to show this at a local authority level. The relative proportion of these emissions is probably increasing as the UK economy continues to transition from manufacturing to services.

The following types of emissions are included, even though they are not considered to be under the influence of local authorities: emissions from motorways, large industrial installations in the EU Emissions Trading Scheme, diesel trains, and from land use, land use change, and forestry. In Rother, these emissions are minimal, due to the lack of any motorways.

There are some important limitations that users of these estimates should be aware of. These include:

- A proportion of national electricity sales cannot be successfully allocated to specific Local Authorities due to lack of information.
- Road transport emission estimates rely on national road traffic estimates, and the distribution of traffic on minor roads has had to be imputed at a local level from regional level data.
- The local distribution of emissions from sources other than gas, electricity generation, or transport is largely estimated from proxy information such as population or employment data.

The data issued in June 2023 for 2020 and earlier has been updated from the dataset issued last year, this is due to the re-calculation of the 2005 to 2020 estimates to reflect the methodological changes used in calculating the 2021 data. This year's data release does not explain all revisions to the historical data series or the year-on-year changes for each local authority, so the changes are taken at face value.

Overview of Greenhouse Gas Emissions in Rother in 2021

In 2021, Rother's District-wide emissions of all three GHGs totalled 472.6 ktCO2e. This is an overall increase of 15% on 2020 and an increase of 4% on the baseline year of 2019, as seen in Table 1. Figure 1 shows the total 2021 emissions broken down by sector.

	Emissions ktCO2			CO2e % change from	
	2019	2020	2021	2019 to 2021	2020 to 2021
Rother District	453.5	403	472.6	+4%	+15%

Table 1 Total GHG Emissions (ktCO2e)

Year	Industry	Commercial	Public Sector	Domestic	Transport	LULUCF	Agriculture	Waste Management	Total (ktCO2e)	Per Capita (tCO_2e)	Per km² (kt CO_2e)
2019	80.4	14.3	9.2	158.3	188.1	-80.8	76.4	7.5	453.5	4.8	0.9
2020	75.4	12.5	9.4	156.4	154.3	-82.2	72.6	4.2	402.6	4.3	0.8
2021	122.8	16.0	13.7	159.7	166.0	-82.0	72.4	4.0	472.6	5.1	0.9

Table 2 GHG Emissions (ktCO2e) by Sector

The Tyndall Centre for Climate Research has developed a science-based approach for local authority area-wide carbon targets that align with meeting the UN's Paris Agreement goal of "limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C". The method is outlined in the Centre's carbon budget tool for local authorities. The tool sets an overall area-wide carbon emissions 'budget' for local authorities through to 2100 and divides these into a series of 5-year budgets. The Tyndall Centre carbon budget for Rother District sets out the annual carbon reduction required to keep within the respective carbon budgets. For Rother, this equates to a reduction of 13.8% year-on-year.

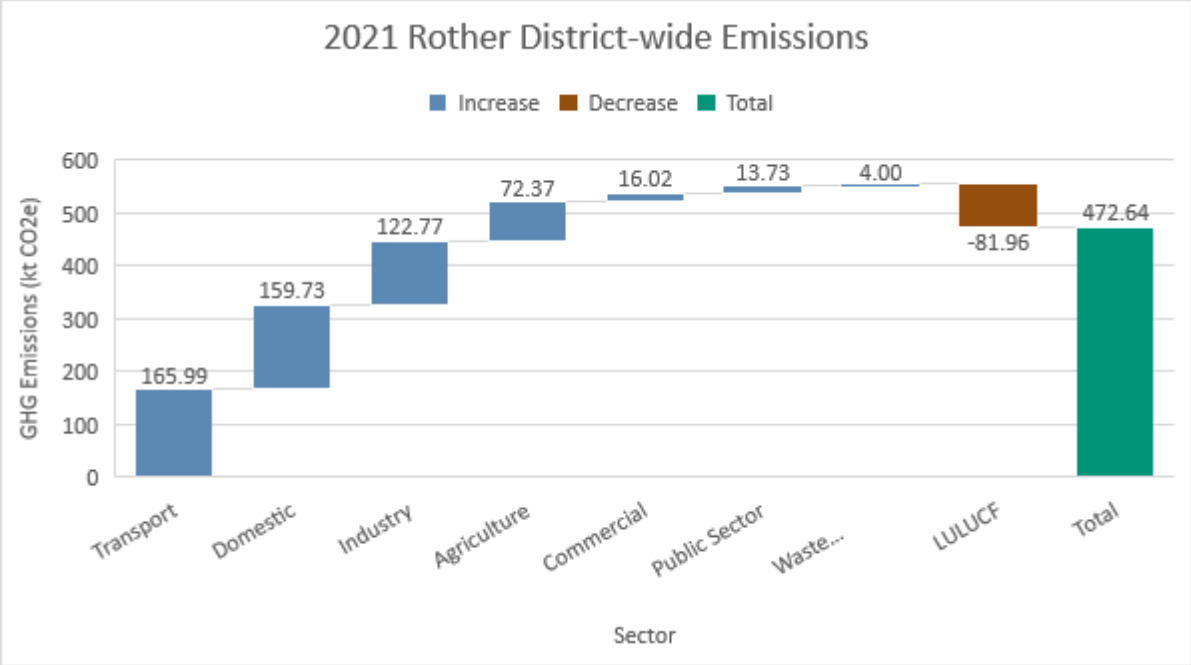

Figure 1 2021 Rother District-wide GHG Emissions by Sector

Since the baseline year of 2019, emissions from Transport, Agriculture and Waste Management have decreased whereas emissions from Industry, Commercial, Public Sector and Domestic sectors have increased, See Table 2 and Figures 1 and 2. Land Use, Land Use Change and Forestry (LULUCF) shows an increase in the sequestration of emissions from the baseline year.

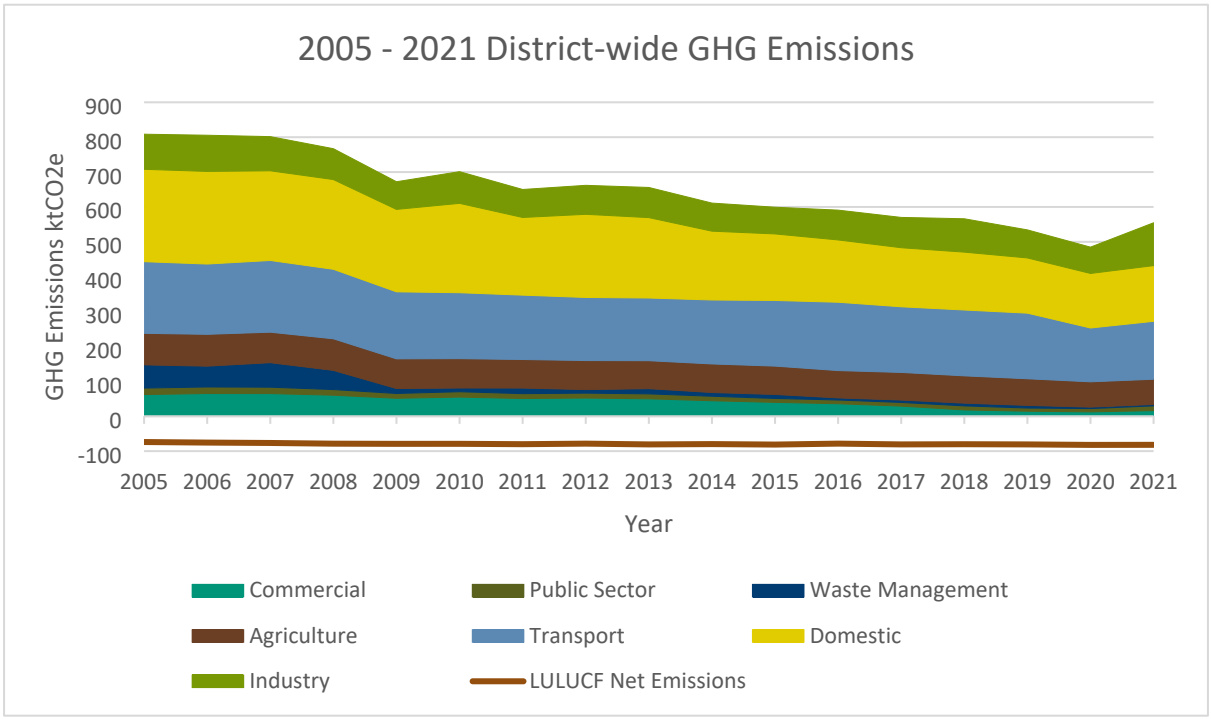

Figure 2 2005 - 2021 District-wide GHG Emissions by Sector

GHG emissions have risen between 2020 and 2021 across all parts of the UK, except for the northeast, and Rother is no exception. The dataset indicates a particularly significant

increase in Rother between 2020 and 2021 mostly as a result of a large increase in industrial gas usage. A post-COVID rebound in transport emissions was seen in Rother, like all district and borough areas in East Sussex, though transport emissions remained below pre-COVID levels.

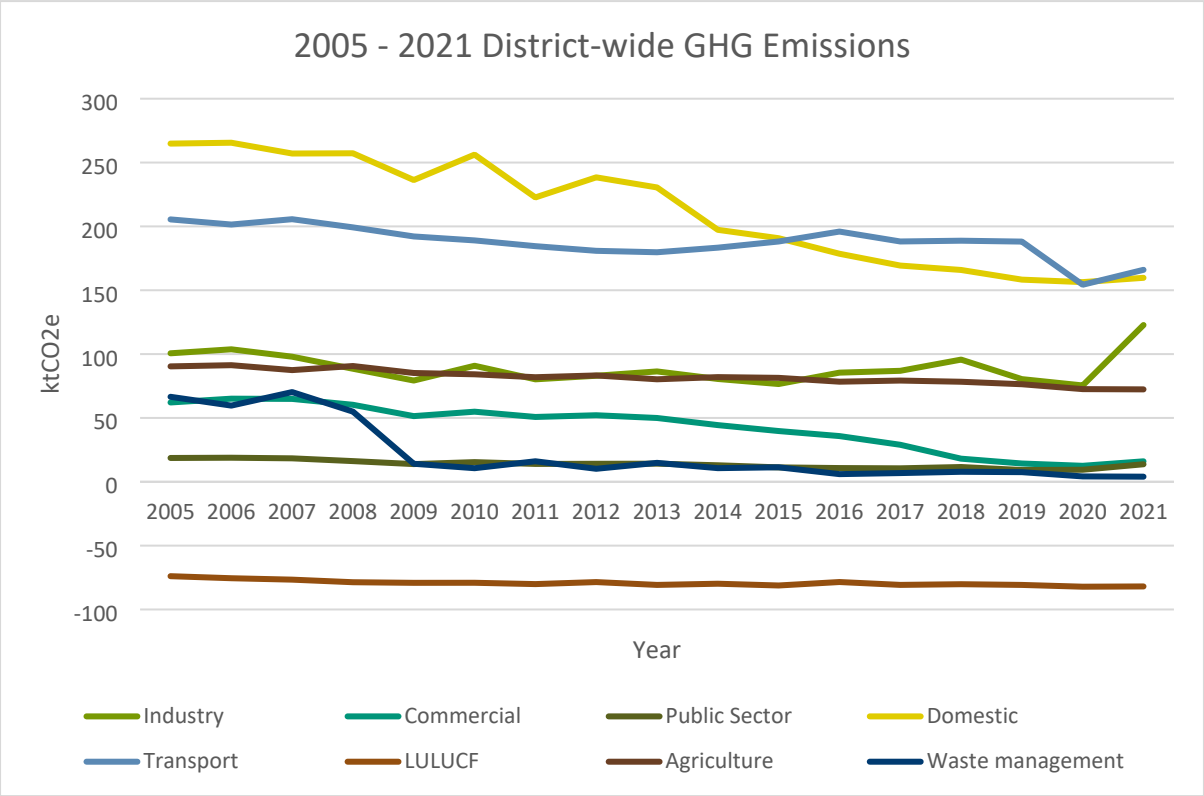

Figure 3 2005 - 2021 District-wide GHG Emissions

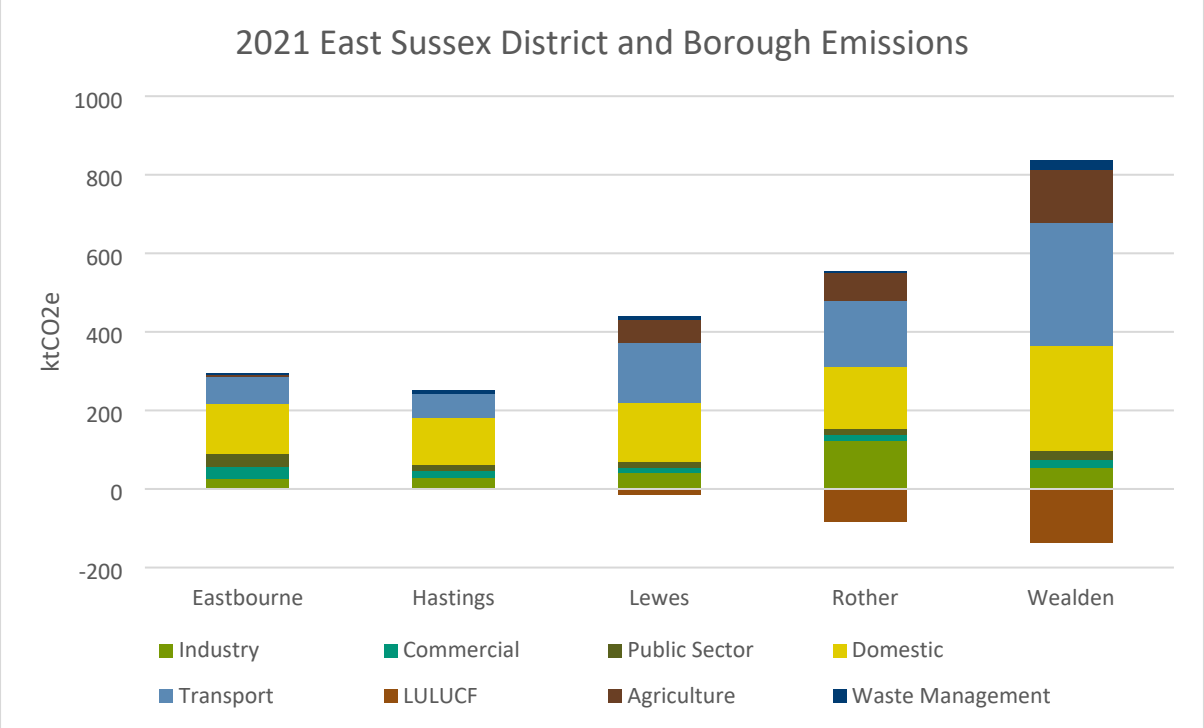

Figure 4 East Sussex District and Borough Emissions

East Sussex currently has one of the lowest per capita GHG emissions of counties in England, which is mainly due to the lack of motorways, the relative lack of heavy industry and relatively higher carbon removals from LULUCF. Rother has the highest per capita GHG emissions in East Sussex, see Figure 5. However, it's important to note that, whilst benchmarking on a per capita basis is a useful measure for domestic emissions, emissions from industry and transport are largely driven by national factors, so comparisons for these sectors should be treated with caution.

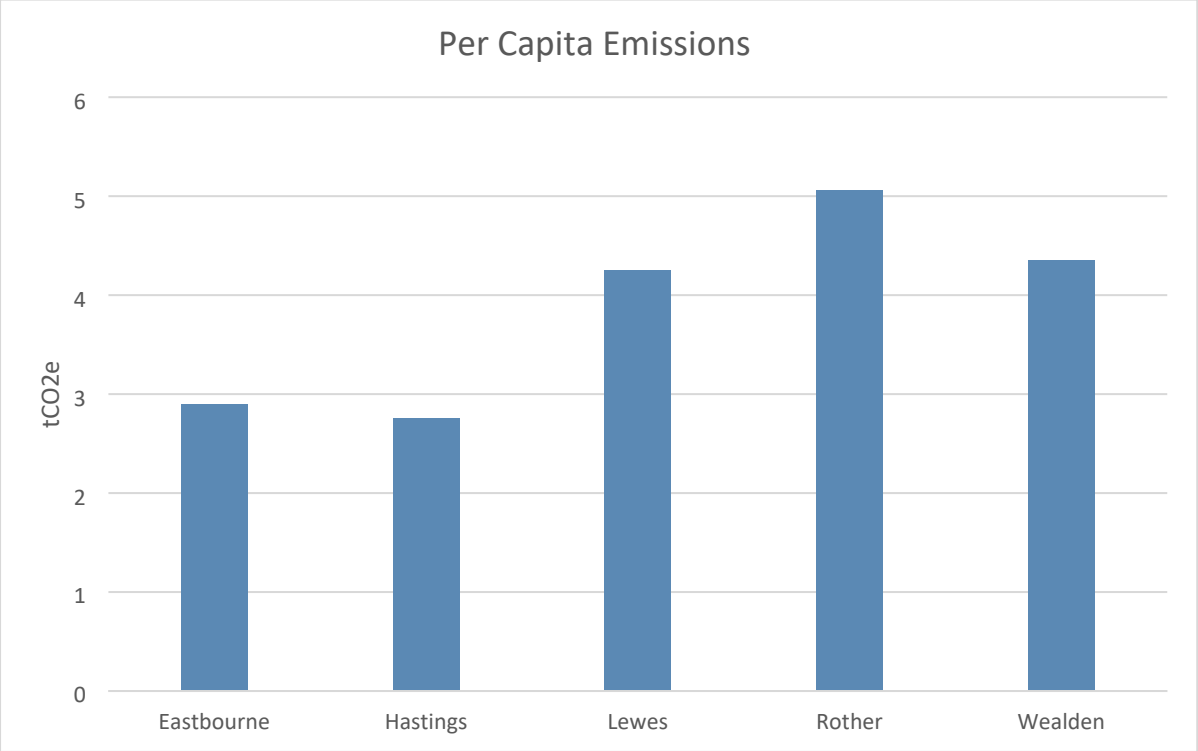

Figure 5 Per Capita Emissions in East Sussex

Transport Emissions

Transport emissions include freight and passenger transport, both for private and business purposes. The DESNZ data is broken down into 5 categories: motorways, A roads, minor roads, diesel railways, and transport 'other'. The category of transport 'other' includes the combustion of lubricants, LPG vehicles, inland waterways, coal railways, and aircraft support vehicles. Note that transport emissions do not include electric railways.

At a national level transport GHG emissions fell by 22% between 2005 and 2021 and in Rother, they fell by 24% over the same period. However, GHG emissions increased nationally between 2020 and 2021 by 9% and in Rother by 7%, though emissions remained significantly below the pre-pandemic levels.

Figure 6 shows the emissions split by different transport categories in Rother from 2019 - 2021.

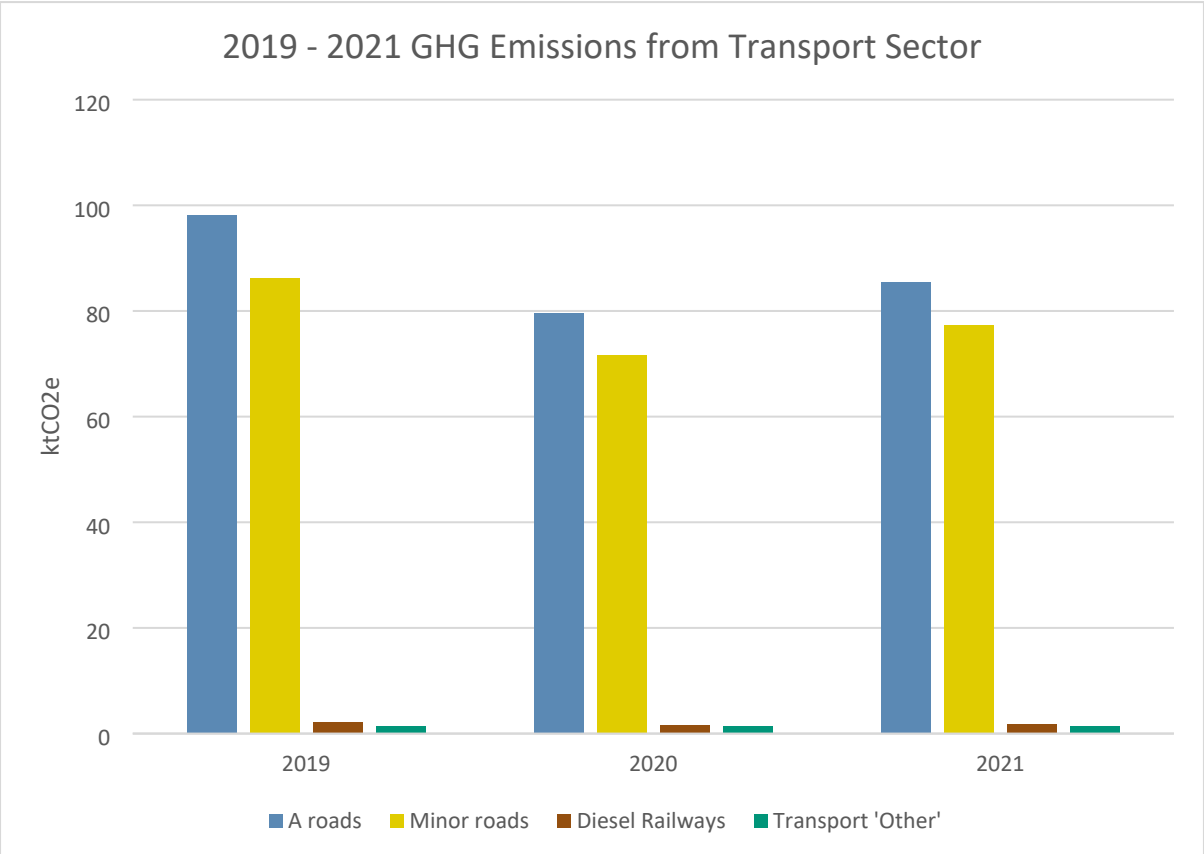

Figure 6 2021 GHG Emissions from Transport

Domestic Emissions

Emissions from the domestic sector are influenced by the fuel types used, the type and condition of housing, the average temperature, average household size, type of household and the income and preferences of the occupiers. Emissions from urban areas tend to be lower than rural areas, due to smaller homes, a larger proportion of terraced houses and flats, and less reliance on high-carbon heating fuels such as oil and coal.

National emissions of GHGs from the domestic sector decreased between 2005 and 2021 by about 39% and in Rother by about 66%, despite an increase in population and the number of homes. The main drivers for this have been the decarbonisation of grid electricity and a gradual improvement in the energy efficiency of homes.

Domestic GHG emissions have increased by 2% between 2020 and 2021 and an increase of 1% since 2019.

Error! Reference source not found. shows most domestic emissions relate to gas central heating systems. Gas emissions are relatively higher in urban areas, as more homes are connected to the gas grid than in rural areas.

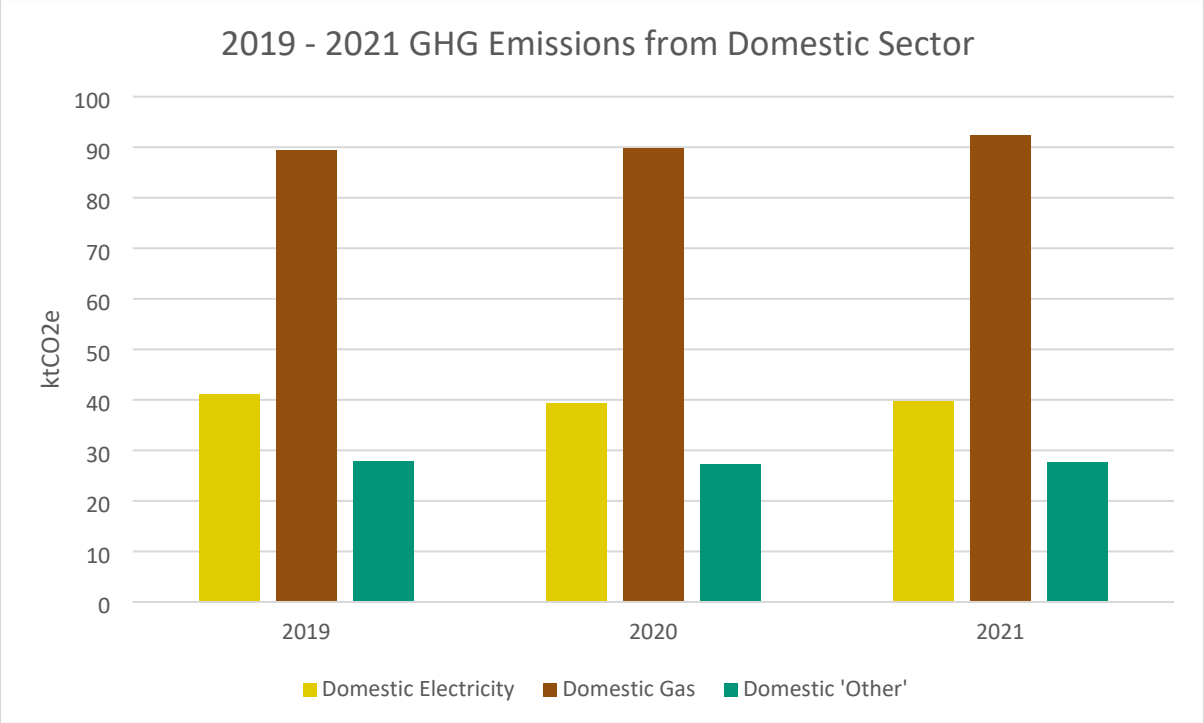

Figure 7 2019 - 2021 GHG Emissions from the Domestic Sector

Industrial Emissions

Emissions from Industry are the third biggest contributor to GHG emissions in Rother. Industrial emissions are broken down into the following categories: electricity usage, gas usage, other fuels (eg. oil) and large industrial installations.

There was an increase in industrial GHG emissions between 2020 and 2021, no doubt largely due to the gradual post-COVID economic recovery. There was a particularly large increase in industrial gas usage in Rother, of nearly 100%, which is shown in Figure 9. (This has been queried with the DESNZ data team as the reasons are unclear).

The government publishes data on non-domestic gas consumption at Middle Layer Super Output Area (MSOA). The 2021 data identifies three MSOA where total non-domestic gas consumption is over 10 GWh – Rother 006, Rother 008 and Rother 011, see Figure 9.

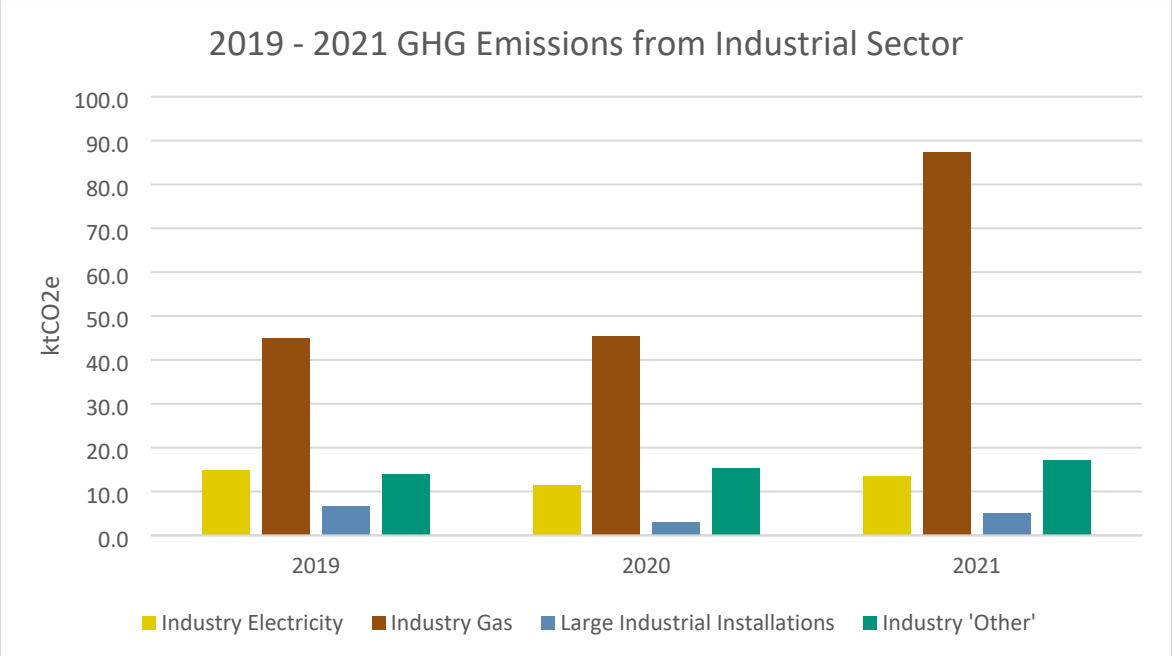

Figure 8 2019 - 2023 GHG Emissions from Industry

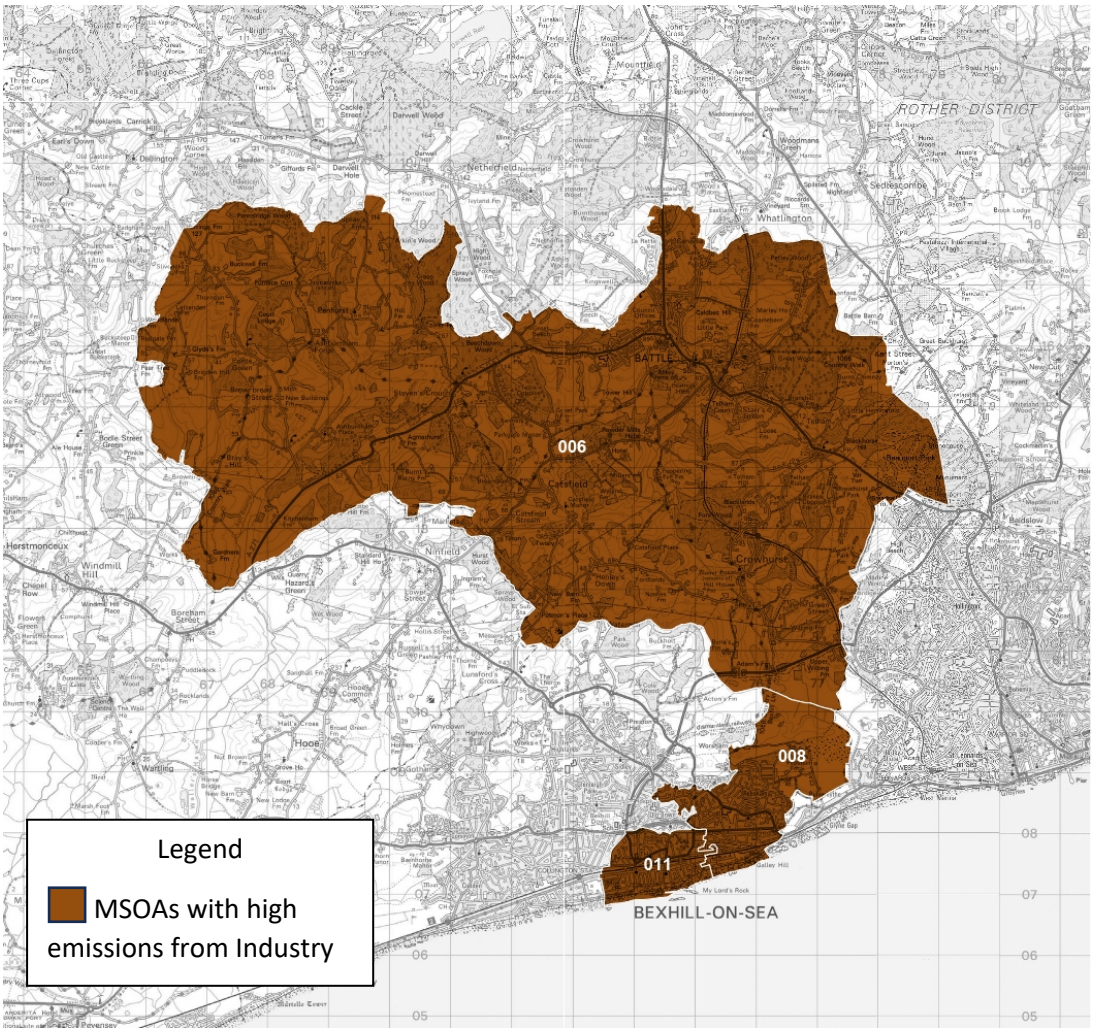

Figure 9 MSOAs in Rother with Industry gas emissions above 10GWh

Land Use Land Use Change and Forestry

Land Use, Land Use Change & Forestry (LULUCF) are activities such as liming, farming practices, afforestation/deforestation and changes in vegetative cover that can remove or produce atmospheric CO2. For example, changing land from natural woodland (a net absorber of CO2) to urban development would mean that the land no longer acts as a carbon sink.

Emissions have remained relatively stable since 2019 with Forested Land and Grassland acting as carbon sinks, see Figure 10. Croplands continue to be the largest source of emissions.

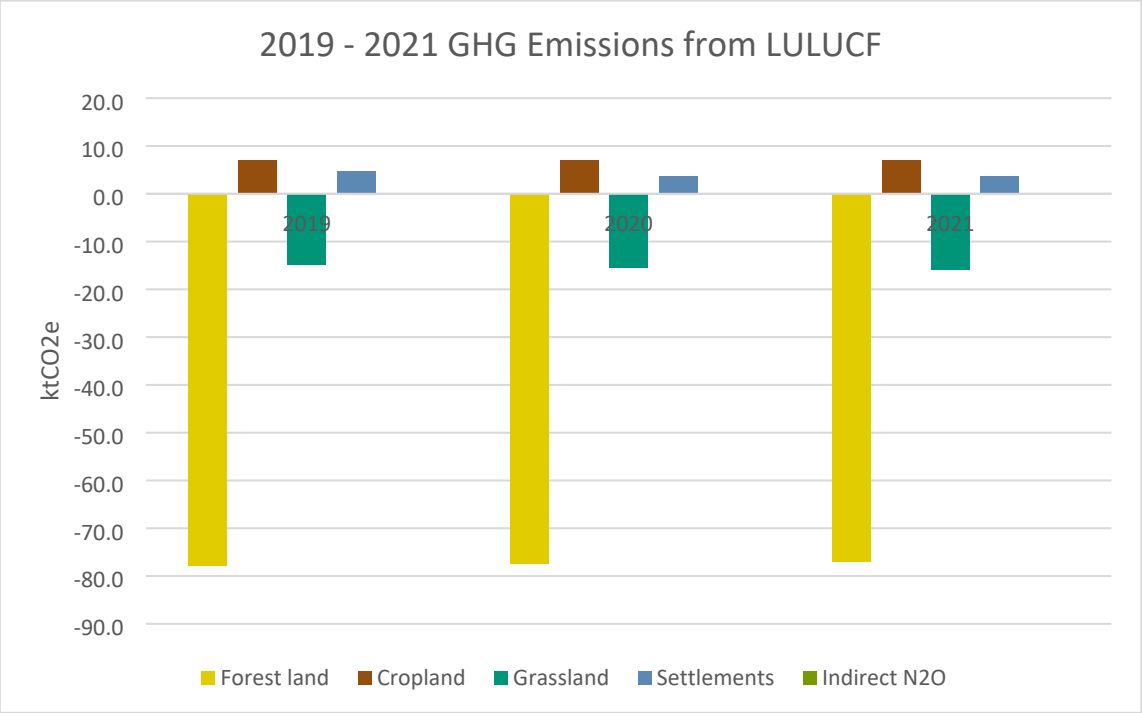

Figure 10 2019 - 2021 GHG Emissions from LULUCF