



Greenhouse Gas Emissions from Forest of Dean District

2005 to 2018

Executive Summary

This document contains a summary of the estimated CO₂ emissions reported for the Forest of Dean District from 2005-2018 by the Department for Business, Energy & Industrial Strategy, published in June 2020.

Total estimated CO₂ emissions for the District were 463.7 k tonnes in 2018, which is a 30% reduction in emissions from 2005. This is an encouraging reduction in emissions but this still equates to 5.2 tonnes annual CO₂ emissions per district resident. The UK Government has set a target of becoming carbon neutral by 2050 and, for reference, this will require each resident to have < 2 tonnes annual CO₂ emissions.

The majority of the district's emissions come from the transport sector (35%), predominantly from road transport. The industry and commercial sector makes up the next largest proportion of emissions at 34%, followed by domestic energy (24%). CO₂ emissions coming from resident's home energy use has made encouraging savings since 2005, with a 39% reduction seen. Experts suggest >13% annual reduction is needed in domestic energy related CO₂ emissions from 2020 onwards to avoid the most catastrophic impacts of climate change.

As expected due to its landscape, the Forest of Dean also acts as a carbon sink, absorbing and storing some CO₂ emissions. In 2018 the district had a net sink of -37.2 k tonnes CO₂ which is around 7% of total district emissions.

Introduction

This document contains a summary of the estimated CO₂ emissions reported for the Forest of Dean District by the **Department for Business, Energy & Industrial Strategy**, published in June 2020.

More detailed information, including full data tables and methodology, can be accessed at:

<https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018>

Estimated emissions are available from 2005 to 2018 and cover the following four areas: Industry and Commercial, Domestic, Transport and Land Use, Land Use Change and Forestry (LULUCF).

This year a new data source was released for monitoring local authority and regional carbon dioxide emissions; the SCATTER Tool. More information about this tool and the results for Forest of Dean District can be seen in section 7 at the end of this document.

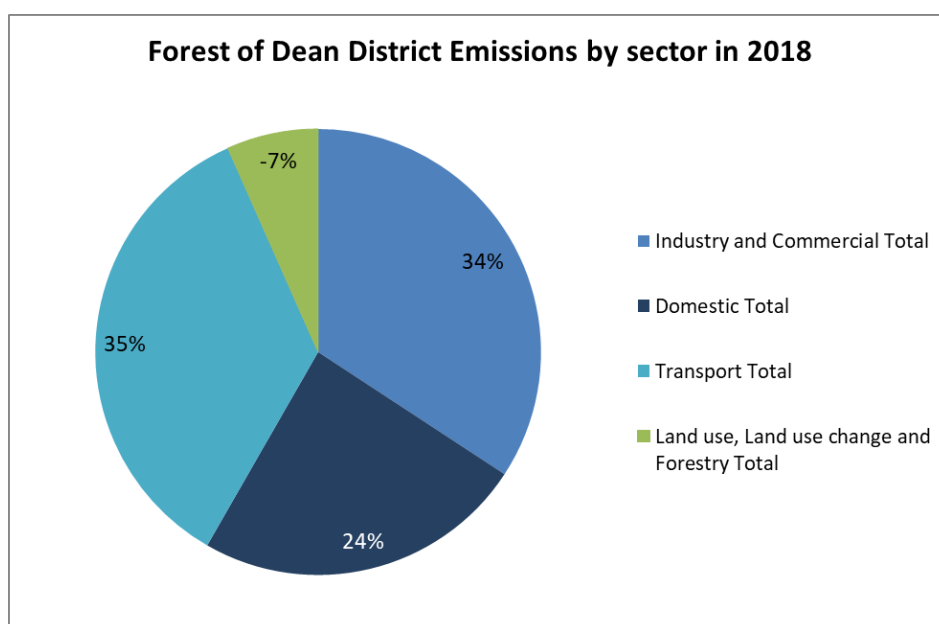
Overview

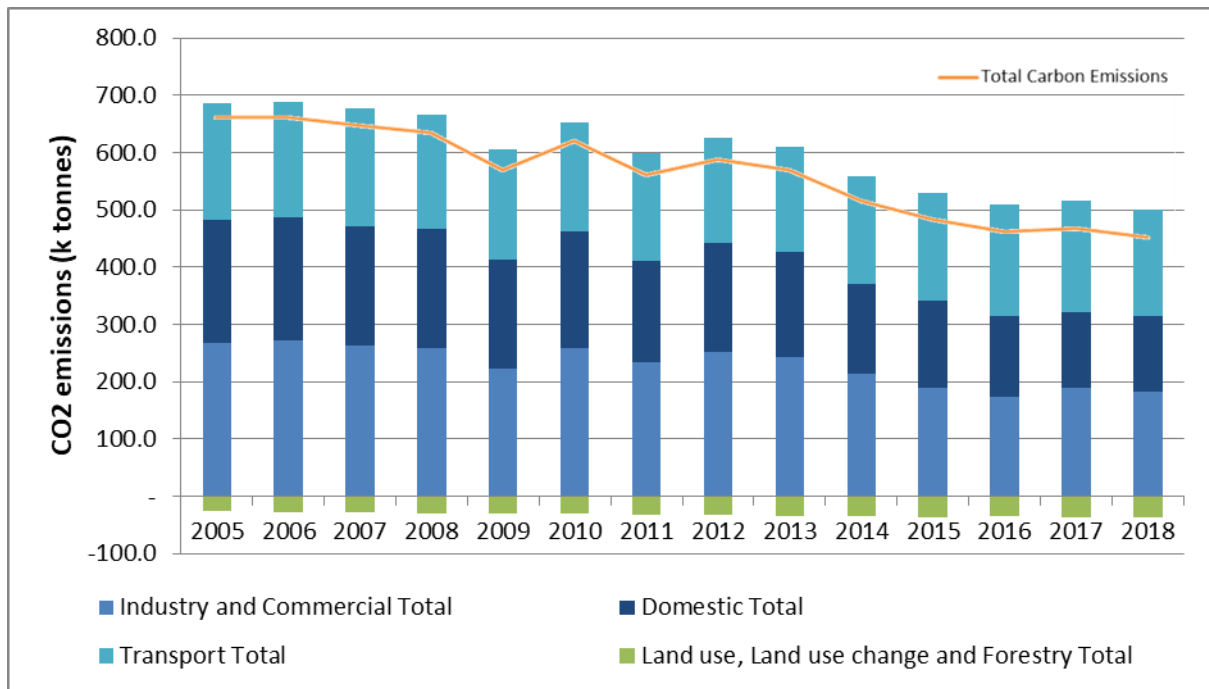
Total estimated CO₂ emissions for the District were **463.7 k tonnes in 2018**, which is a **30% reduction** in emissions from 2005.

This equates to **5.2 tonnes CO₂ emissions per capita (2018)** ([vs 4.8 tonnes CO₂ per capita for the South West region](#)). It is estimated that for the UK to achieve 80% reduction in emissions by 2050, per capita emissions would have to be 2 tonnes by 2050. The Government target is now carbon neutral by 2050 so on this basis per capita emissions are required to be <2 tonnes by 2050.

The majority of emissions come from the **transport sector** (186.7 k tonnes CO₂), with the industry and commercial sector following close behind (183.1k tonnes CO₂). Domestic emissions are estimated to be 131.1 k tonnes CO₂ and net LULUCF is estimated to be a carbon sink (-37.2 k tonnes CO₂).

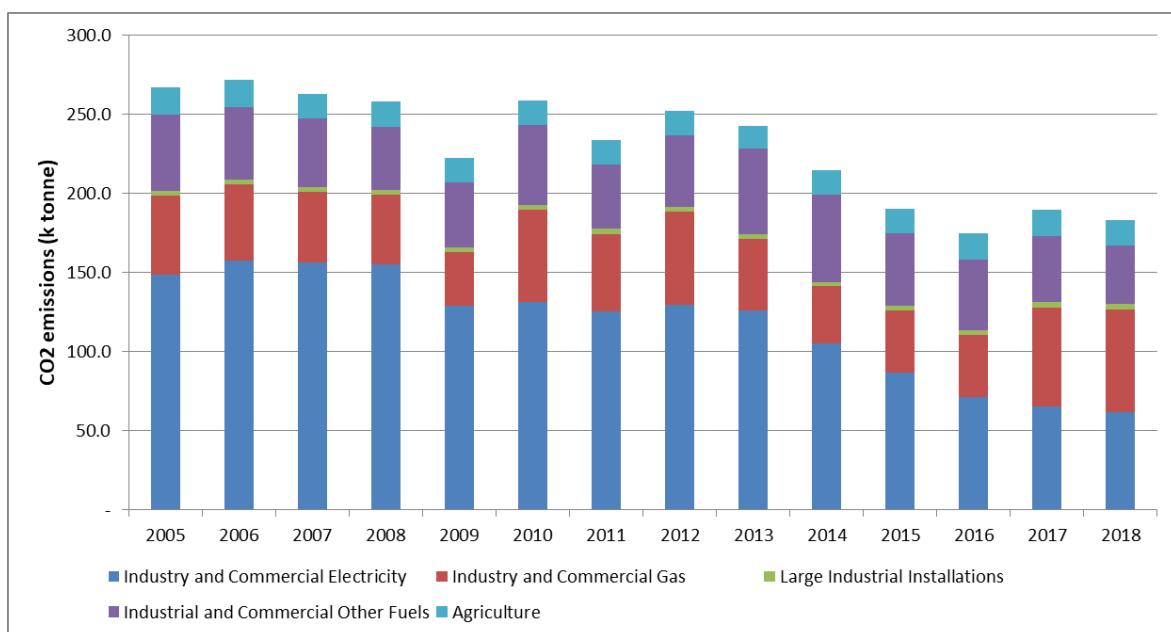
Total estimated emissions are steadily decreasing at an average rate of 15.2 k tonnes CO₂ per year. **If** we were to maintain this rate of reduction, in theory, carbon neutrality would be achieved in approximately 2048.





Industry and Commercial

In 2018 emissions from total industry and commercial have decreased 31.4% from 2005/6, with the largest percentage decrease coming from **industry and commercial electricity**. However in 2018 they are still the second largest proportion of industry and commercial emissions for the District (34%). **Industry and commercial gas** has increased since 2005/6 and is now the largest proportion of such emissions (35%). Large industrial installations (3%) and agriculture (9%) make up the smallest proportions.



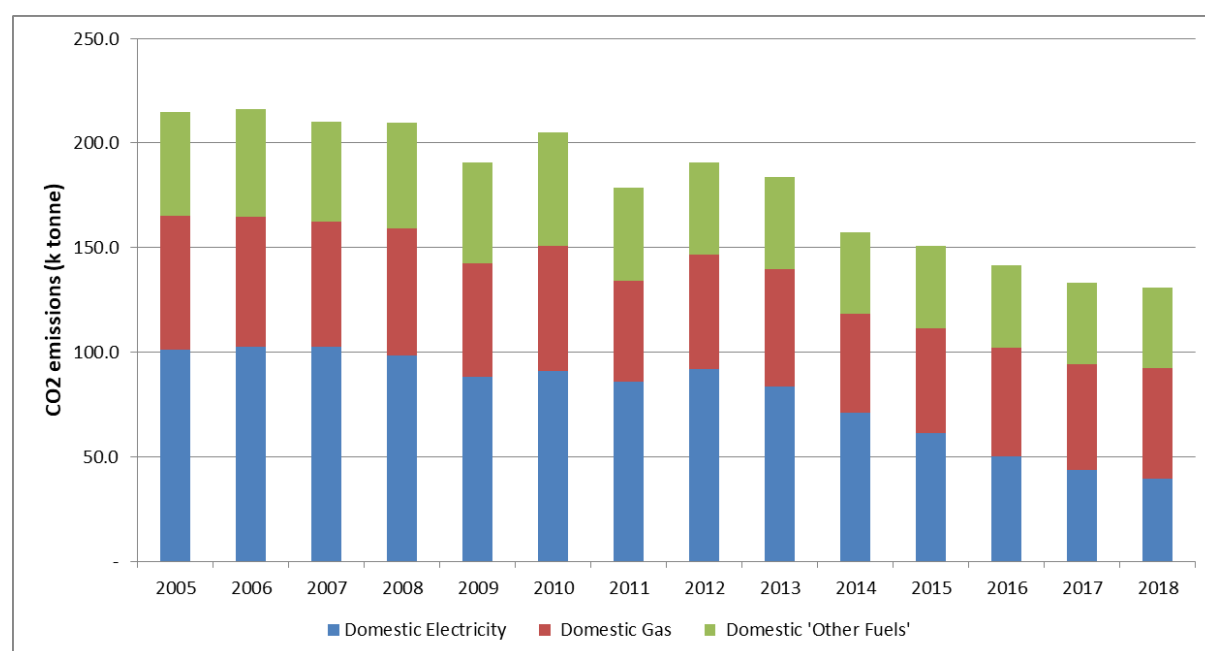
Domestic - Energy

In 2018 **11.7% of households** were reported to be **fuel poor**; a 0.8% rise on the previous year ([BEIS, 2020](#)) and in 2017/18 excess winter mortality index was reported to be 30.5 ([Office for National Statistics, 2019](#)).

39% of homes are not connected to the gas network (Gloucestershire Energy Strategy, 2019) and the [Gloucestershire Energy Strategy](#), 2019, identified the Forest of Dean as an ideal location for testing 'fossil free heating zones'.

Up to 2017 there were **2,161 installations of renewable electricity** in the District, 99% of which are PV. The remaining 1% consists of anaerobic digestion, onshore wind and hydro (BEIS, 2018).

Domestic estimated CO₂ emissions have reduced by 39% (> 83 k tonnes CO₂) since 2005 and now contribute to 24% of total District emissions.



To stay within the recommended carbon budget provided by the Tyndall Centre Forest of Dean will, from 2020 onwards, need to achieve average mitigation rates of CO₂ from energy of around -13.6% per year (read more [here](#)).

Warm and Well

Warm and Well is managed by Severn Wye Energy Agency on behalf of the seven local authorities in South Gloucestershire and Gloucestershire, and Gloucestershire County Council.

The Warm & Well scheme aims to improve energy efficiency in the home and reduce the risk of fuel poverty and associated health problems by:

- Raising public awareness

- Providing specific and appropriate advice by telephone, referrals from partner organisations and engagement at events
- Delivering home visits to vulnerable customers that includes an energy survey and bespoke advice report
- Making referrals into grant and discount schemes.

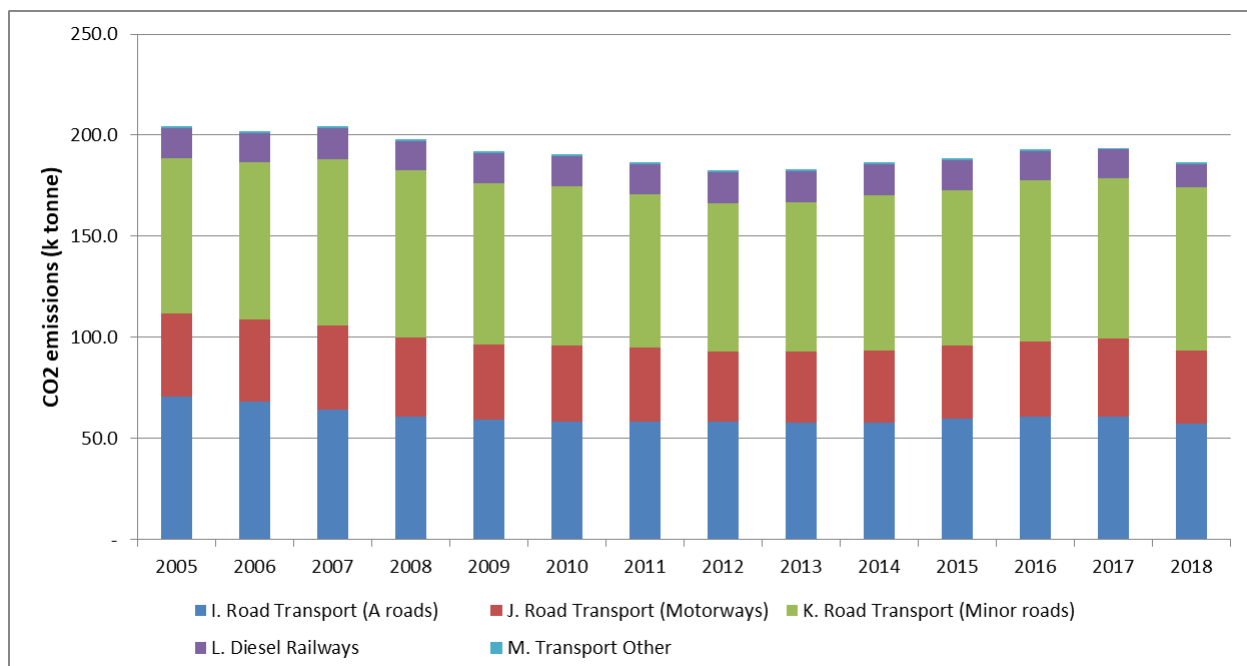
In 2017/18 247 households and 16 businesses in Forest of Dean received advice from Warm and Well. A total of 107 energy efficiency measures were installed, improving 100 properties. The installation of insulation in Forest of Dean properties created lifetime CO₂ emission savings of around 2.25 k tonnes.

Transport

The majority of District estimated transport emissions come from road transport. In 2018 this was **99%** of total transport emissions.

The majority of road transport emissions comes from transport on minor roads.

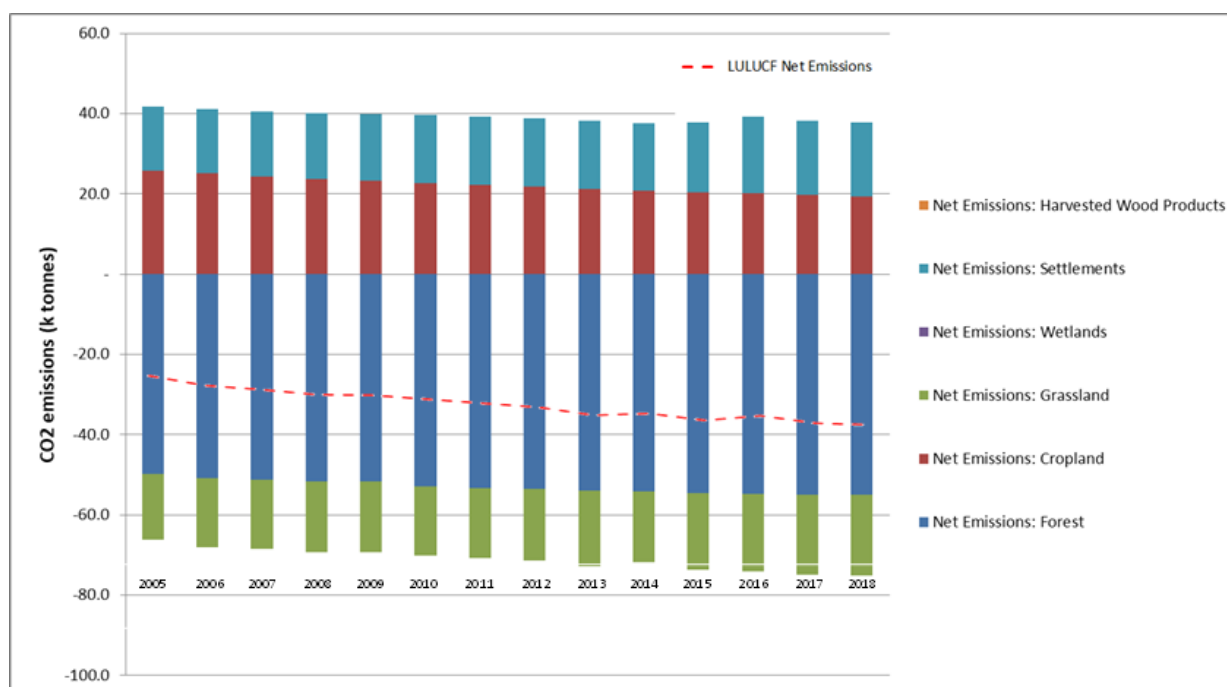
Total transport emissions reached their lowest point in 2012/13 for the period 2005-2018. Since 2013 total emissions from transport have slowly increased, with these increases coming from road transport. From 2017 to 2018 there was a small increase in emissions coming from transport on minor roads, however 2018 also saw a total net reduction in transport emissions, with the largest reduction coming from road transport on A roads.



Land Use, Land Use Change and Forestry

England as a whole is a net sink of LULUCF emissions (-5,341 k tonnes CO₂, 2018). In 2018 the Forest of Dean specifically had a net sink of LULUCF emissions of -37.2 k tonnes CO₂, contributing 29% to Gloucestershire's total net sink of LULUCF emissions (-128.3 k tonnes CO₂).

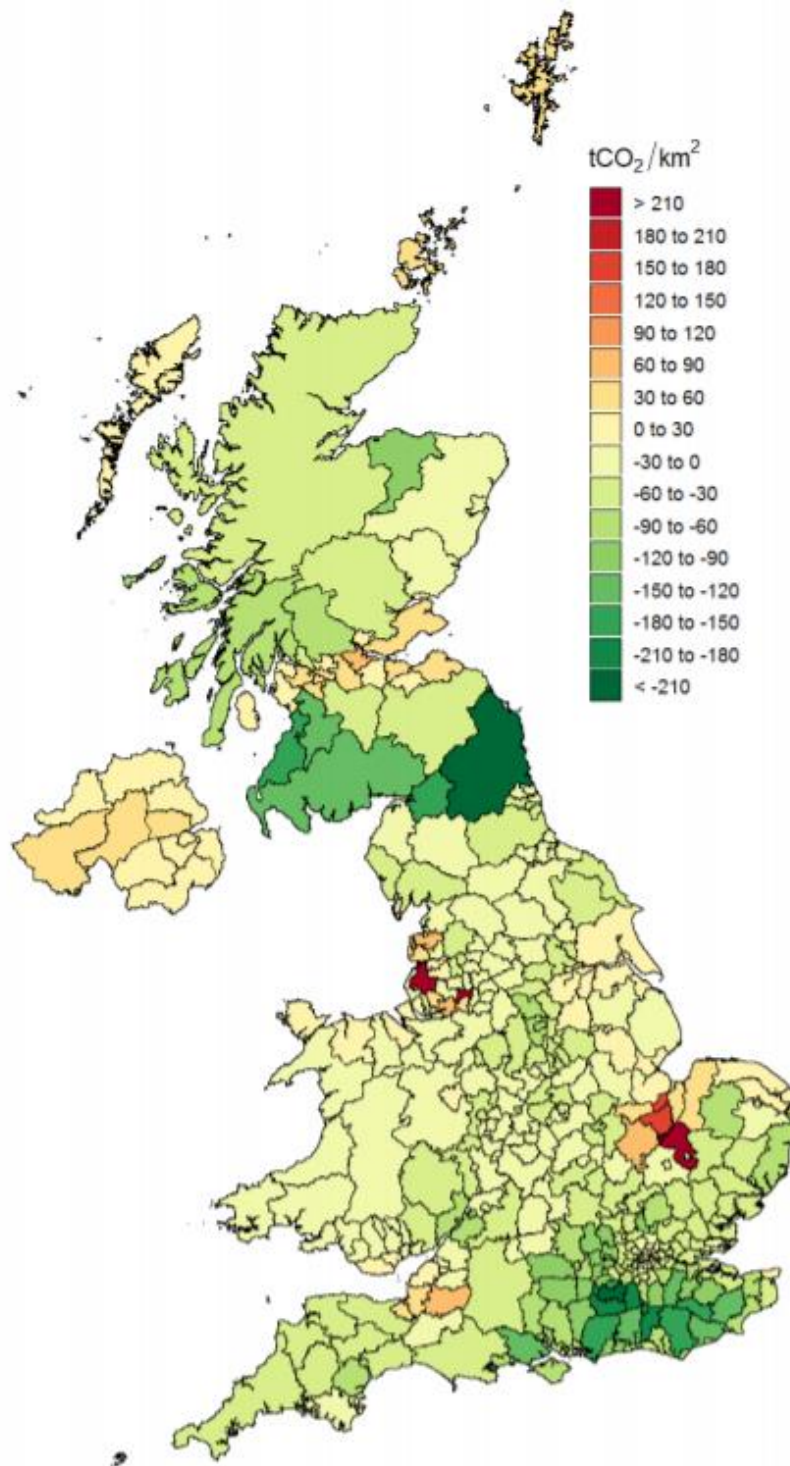
The following graph shows how the Forest of Dean's net sink of LULUCF emissions is distributed across the six classes identified by the IPCC Guidelines for National Greenhouse for National Greenhouse Gas Inventories (IPCC 2006): forest, cropland, wetlands, settlements, grasslands and harvested wood products, from 2005 to 2018.



More information on how emissions from LULUCF have been calculated can be accessed here:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/894794/lulucf-local-authority-mapping-report-2020.pdf

See the map on the next page for emissions or removals of carbon dioxide from LULUCF per local authority area (tonnes CO₂ / km²) in 2018.



New Data Sources

The **Scatter Tool** allows a Local Authority to develop a greenhouse gas inventory with associated carbon reporting outputs. This has been led by Anthesis in partnership with the Department for

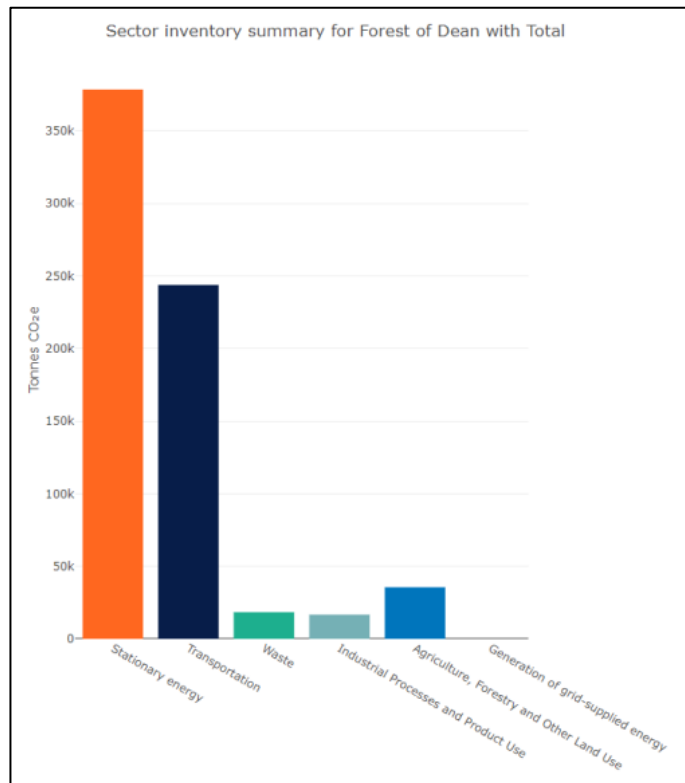
Business, Energy and Industrial Strategy, Nottingham City Council and The Tyndall Centre for Climate Change Research. The outputs from the Scatter Tool utilises datasets ranging from 2014-2018 to represent emissions for the district for 2017. The outputs include data on emissions from additional sectors, not included in the BEIS emission report for Local Authorities used for sections 1-6 in this report. For example, solid waste, waste water management, aviation, livestock and land use.

The tool was originally designed as a tool for cities and other very large, dense urban areas such as combined authorities like Manchester. The conversion to rural use, and scaling down to small districts, has created some problems and undermined confidence in its accuracy for reporting on carbon emissions in a rural setting and in smaller geographies.

The outputs from the scatter tool for the Forest of Dean District can be seen below:

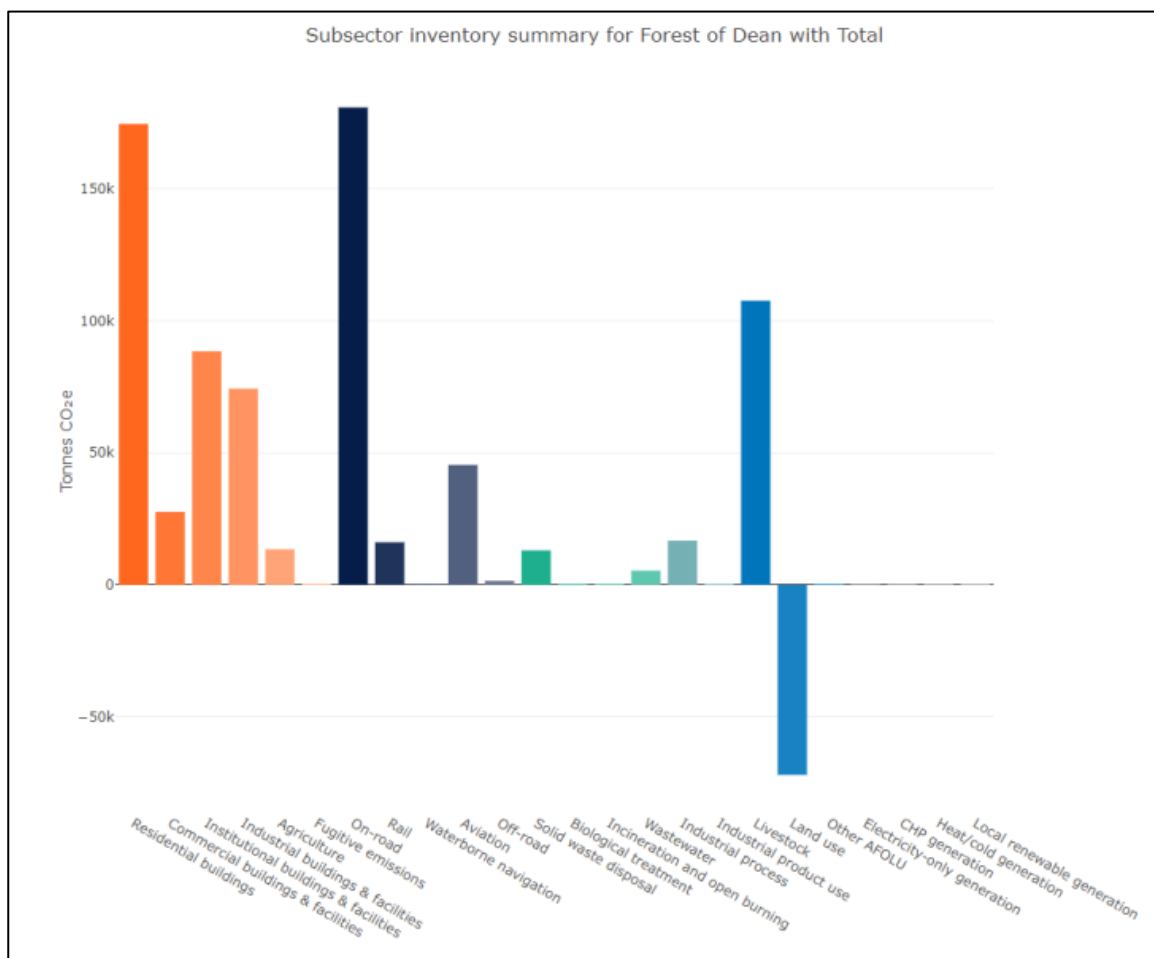
Summary Greenhouse Gas emissions (tonnes CO ₂ e)		Scope 1	Scope 2	Scope 3	
Sector	Sub-sector	Total tCO ₂ e	Total tCO ₂ e	Total tCO ₂ e	Total tCO ₂ e
		DIRECT	INDIRECT	OTHER	TOTAL
Stationary energy	Residential buildings	86,183.83	60,613.02	27,751.01	174,547.86
	Commercial buildings & facilities	13,888.78	9,523.17	4,200.81	27,612.76
	Institutional buildings & facilities	28,482.38	48,122.57	11,829.50	88,434.45
	Industrial buildings & facilities	35,826.54	27,895.77	10,588.41	74,310.72
	Agriculture	10,865.34	2.77	2,593.23	13,461.34
	Fugitive emissions	NO	-	-	-
Transportation	On-road	150,397.45	IE	30,381.16	180,778.62
	Rail	12,999.22	IE	3,097.98	16,097.20
	Waterborne navigation	NO	IE	IE	-
	Aviation	NO	IE	45,400.48	45,400.48
	Off-road	1,503.97	-	NE	1,503.97
Waste	Solid waste disposal	13,034.34	-	IE	13,034.34
	Biological treatment	NO	-	IE	-
	Incineration and open burning	NO	-	IE	-
	Wastewater	5,356.09	-	NO	5,356.09
IPPU	Industrial process	16,726.20	-	-	16,726.20
	Industrial product use	0.00	-	NE	0.00
AFOLU	Livestock	107,580.40	-	-	107,580.40
	Land use	- 72,003.46	-	-	- 72,003.46
	Other AFOLU	NE	-	-	-
Generation of grid-supplied energy	Electricity-only generation	NO	-	NO	-
	CHP generation	NO	-	NO	-
	Heat/cold generation	NE	-	-	-
	Local renewable generation	3.52	NO	-	3.52

Notation keys:
Not Occuring
Integrated Elsewhere
Not Estimated
Confidential
Combination of notation keys
N/A
Required
Optional



The greenhouse gas inventory covers emissions within the local authority boundary, calculated in tonnes of carbon dioxide equivalent (tCO₂e) which includes gases CO₂, N₂O and CH₄, reported in CO₂-equivalent.

Some sectors and subsectors will have very low emissions and may not be clearly visible on the graph.



This data suggests total Forest of Dean District emissions for 2017 of 692.84 ktonnes CO₂e. This is equivalent to around 8 tonnes CO₂e per capita.

These outputs differ from the total emissions reported for 2017 from Department for Business, Energy & Industrial Strategy, published in June 2019. This is to be expected as they include additional subsectors. See [Forest of Dean Carbon Emissions Report 2005-2017](#) for more information regarding these outputs.

See the following table for a comparison of 2017 emissions for BEIS 2005-2017 Report and the Scatter Tool (2017):

	BEIS 2005-2017 Emission Report	The Scatter Tool
Total emissions (kt CO ₂ e)	475.9	692.84
Emissions per capita (tonnes CO ₂ e)	5.5	8

Neither of these datasets take full account of offshored emissions. In March 2020 [WWF](#) reported that up to 45% of UK emissions are from imported goods. Using this figure would

give estimated total emissions for Forest of Dean District of 690-970 ktCO₂e per annum or 7.7 – 11.2 tonnes CO₂e per person per annum.