

Future Oxfordshire Partnership Environment Advisory Group briefing paper

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Oxfordshire Greenhouse Gas Emissions: Annual report, 2023

Summary and purpose

This report summarises the latest greenhouse gas emissions data for Oxfordshire (published by the Department for Energy Security and Net Zero in June 2023):

- Sources in Oxfordshire accounted for **4,312.6 kt CO₂e** in 2021 (latest available data), **equivalent to 5.9 tCO₂e per person**, above the national average (5.5 tCO₂e).
 - Transport was the highest emitting sector, accounting for over one third (37%) of all emissions, with the domestic sector accounting for a further quarter of emissions (25%).
 - These **rates are 7% higher than in 2020** (4,017.3 kt CO₂e, 5.6 tCO₂e per person) when emissions – particularly transport emissions - were significantly impacted by the COVID-19 pandemic. This trend is seen across most UK local authority areas.
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- Overall trends however show a steady decrease in emissions over time, with countywide emissions in 2021 **34% lower** than the baseline year (2008).

How this briefing paper contributes to the Oxfordshire Strategic Vision Outcomes

1. This work supports the FOP strategic vision on climate action and provides a framework for monitoring progress to net zero.

What would the value be of this subject being considered by the advisory group and how can the advisory group or wider FOP influence the project/programme or activity?

2. EAG are asked to:
 - a. note the reported emissions data
 - b. endorse the targets set out in the route map, noting the potential impact that national policy changes may have on these.

Background

3. The Future Oxfordshire Partnership (FOP) Net Zero Route Map and Action Plan, published in 2023¹, sets a pathway for the county to achieve net zero by 2050 (with intermediate emission reduction milestones at 2025, 2030 and 2040). The Route Map is based on the 'Oxfordshire leading the way' scenario set out in the Pathways to Zero Carbon Oxfordshire report published by the University of Oxford in 2021².
4. To track progress toward the net zero emissions target FOP members agreed to receive an annual summary of area-based greenhouse gas emissions data for Oxfordshire by sector.
5. This report presents the latest data (2021) on emissions by local authority area published by the Department for Energy Security and Net Zero in July 2023, assesses trends over time and progress toward the countywide emission reduction targets.³

¹ [Net Zero Route Map and Action Plan](#) (City Science, 2023)

² [Pathways to a zero carbon Oxfordshire](#), Environmental Change Institute, 2021

³ The emissions baseline and modelling in the Net Zero Route Map and Action Plan is based on earlier releases of the DESNZ dataset. As the data series is subject to revision with each new release (as data sources and methodologies improve), figures on past emissions in this update report may differ from those in the City Science report.

Emission sources in Oxfordshire accounted for **4,312.6 kt CO₂e** in 2021, equivalent to **5.9 tCO₂e per person**.

Countywide greenhouse gas emissions by sector, 2021

6. The latest greenhouse gas emissions data published by the Department for Energy Security and Net Zero⁴ show that 4,312.6 kilotonnes of greenhouse gases (expressed as kilotonnes of CO₂ equivalent, ktCO₂e⁵) were emitted from sources in Oxfordshire during 2021, equivalent to 5.9 tCO₂e per person.
- Emissions per person were above the average across England (5.5 tCO₂e) and the South East region (4.7 tCO₂e).
 - Transport was the highest emitting sector (Figure 1), accounting for over one third (37%) of all emissions. The highest proportion of transport emissions was from vehicles travelling on A roads across the county (Figure 1a).
 - The domestic sector accounted for one quarter of total emissions (25%), with the greatest proportion of emissions (60%) from use of gas.

⁴ All data and figures in this report are sourced from the [UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021 \(published July 2023\)](#) unless otherwise stated

⁵ The 2023 release includes data for carbon dioxide, nitrous oxide and methane by local authority area, all figures used in this section (unless otherwise stated) are for total greenhouse gas emissions expressed as carbon dioxide equivalents CO₂e. Carbon dioxide accounts for 87% of the total emissions, nitrous oxide 5% and methane 8%. Datasets published in 2021 or earlier cover carbon dioxide emissions only.

7. A breakdown of emissions by broad sector is provided in Figure 1, whilst Figure 1a) provides further detail on emissions by source.

Figure 1: Oxfordshire Greenhouse Gas Emissions by sector, 2021

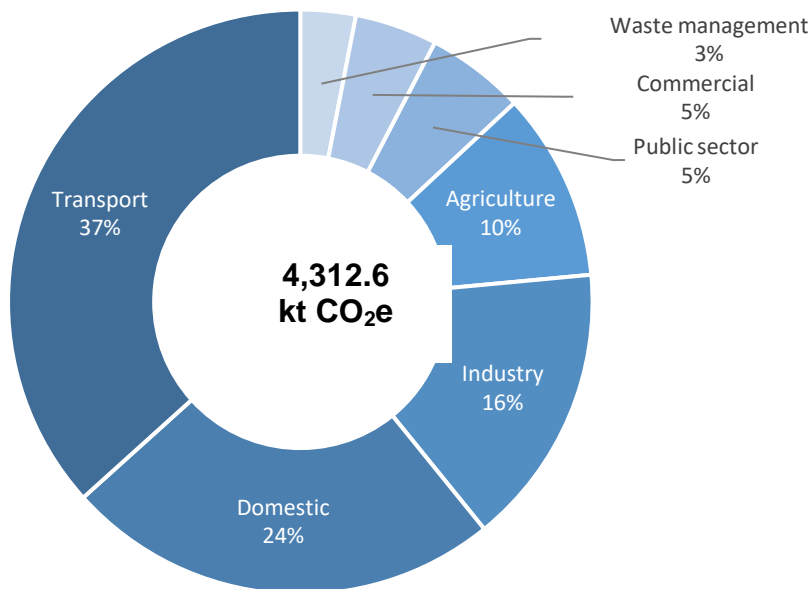
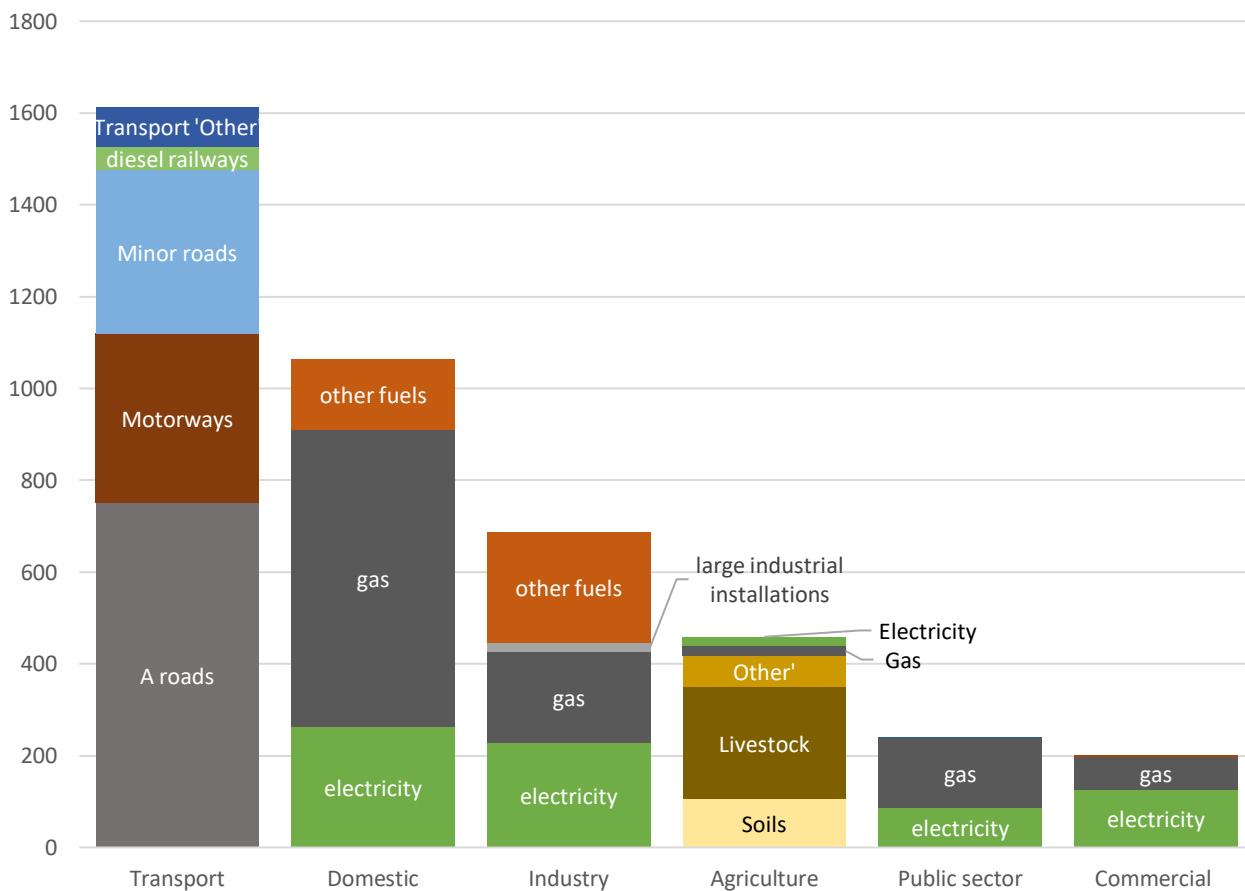


Figure 1a: Emissions by sector and source, 2021



CHANGE OVER TIME

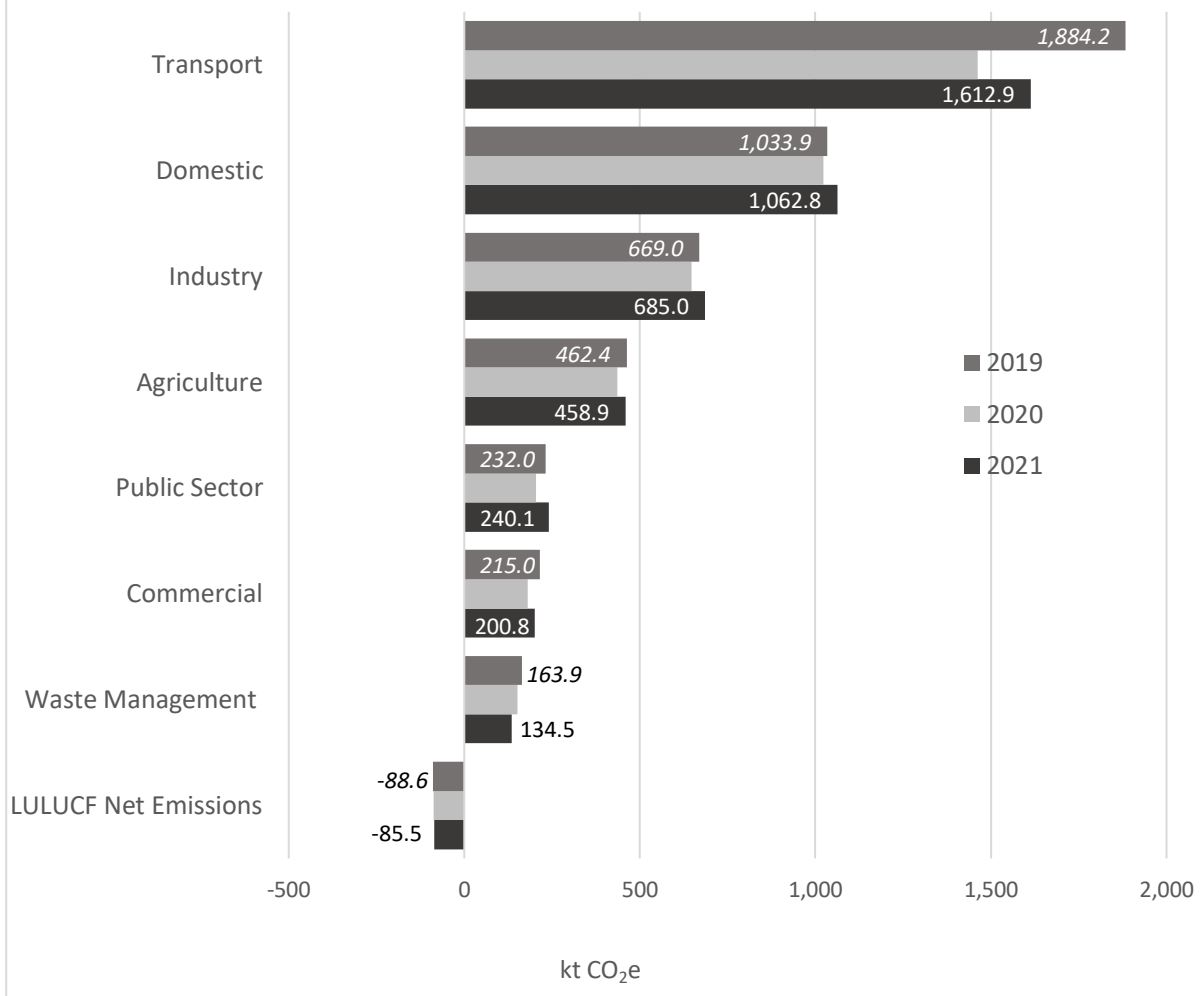
Comparison with previous years

Total emissions in 2021 were 7% higher than in 2020 (4,309.6 kt CO₂e compared with 4,015.7 kt CO₂e in 2020), although **6% lower than in 2019** (Figure 2).

8. For this update we have looked back at emissions data for the past two years – 2019 and 2020 – with a view to distinguishing the widespread impact of the Covid-19 pandemic and the subsequent rebound on emissions from overall trends. These impacts are reflected across most UK local authority areas.
9. In Oxfordshire, emissions from transport showed the greatest reduction from 2019 to 2020 (22% lower) and whilst they increased again from 2020 to 2021, transport emissions in 2021 remained 14% lower than in 2019.
10. Slight increases in emissions are noted between 2019 and 2021 in a number of sectors (Figure 2):
 - Total domestic and total public sector emissions each increased by 3% between 2019 and 2021; the main driver of this increase is likely to be colder temperatures in 2021 leading to increased gas consumption, a trend seen across most UK local authority areas.
 - Emissions from industrial sources show an increase of 2% between 2019 and 2021, however, this is likely to be due to improvements in data sources and methodology.⁶

⁶ DESNZ UK Local and regional greenhouse gas emissions: statistical release updated July 2023

Figure 2: Emissions from Oxfordshire by broad sector
2019 to 2021



Comparison against baseline

Total emissions in Oxfordshire fell by more than one third (34%) between 2008 (baseline year) and 2021, whilst emissions per capita fell by 42%, from 10.3 tCO₂e per person to 5.9 tCO₂e per person in 2021.

11. Whilst the Route Map and Action Plan uses 2020 as the base year, previously adopted countywide targets have measured progress against a 2008 baseline. The following section provides a summary of changes over this time period.
12. Total greenhouse gas emissions from sources in Oxfordshire have fallen by just over one third (34%) since 2008. Emission reductions are seen across all sectors (Figures 3, 3a and 3b) including:
 - 70% reduction from commercial sources
 - 35% reduction from the domestic sector, with the biggest reduction in emissions from electricity use (largely reflecting significant decarbonisation of electricity supply over this time period)

- 16% reduction from transport sources, with reductions seen across all sources since 2008 but with the biggest reductions in the most recent years (with a notable impact of travel restrictions during the COVID-19 pandemic).

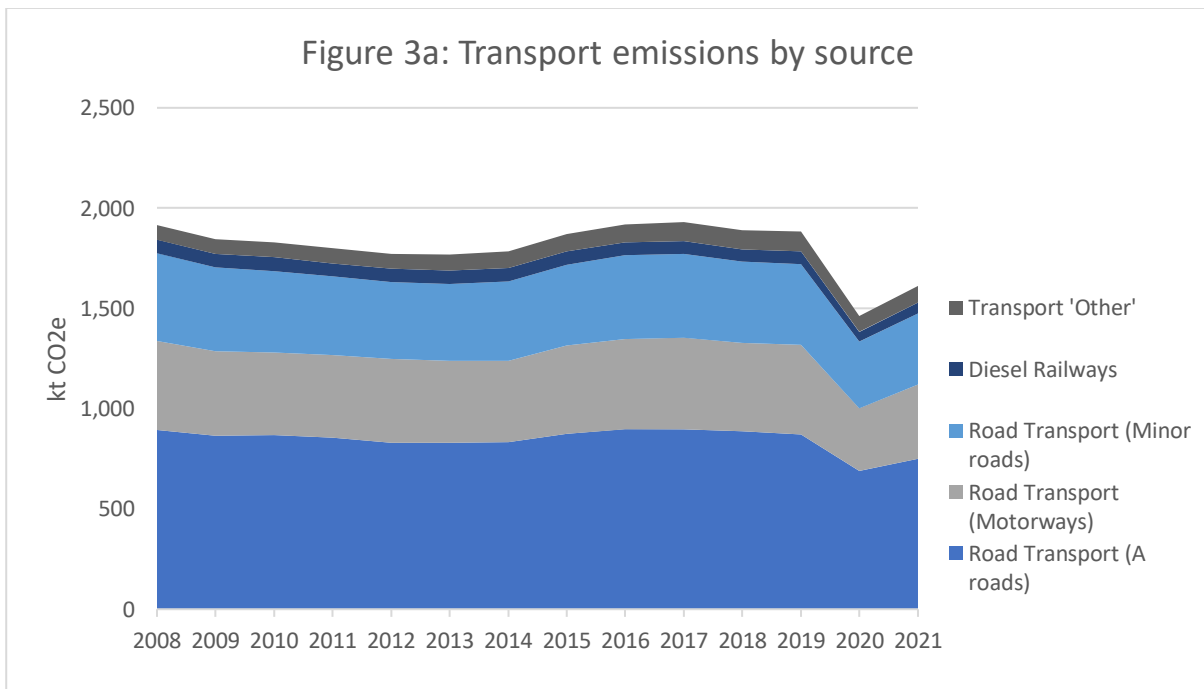
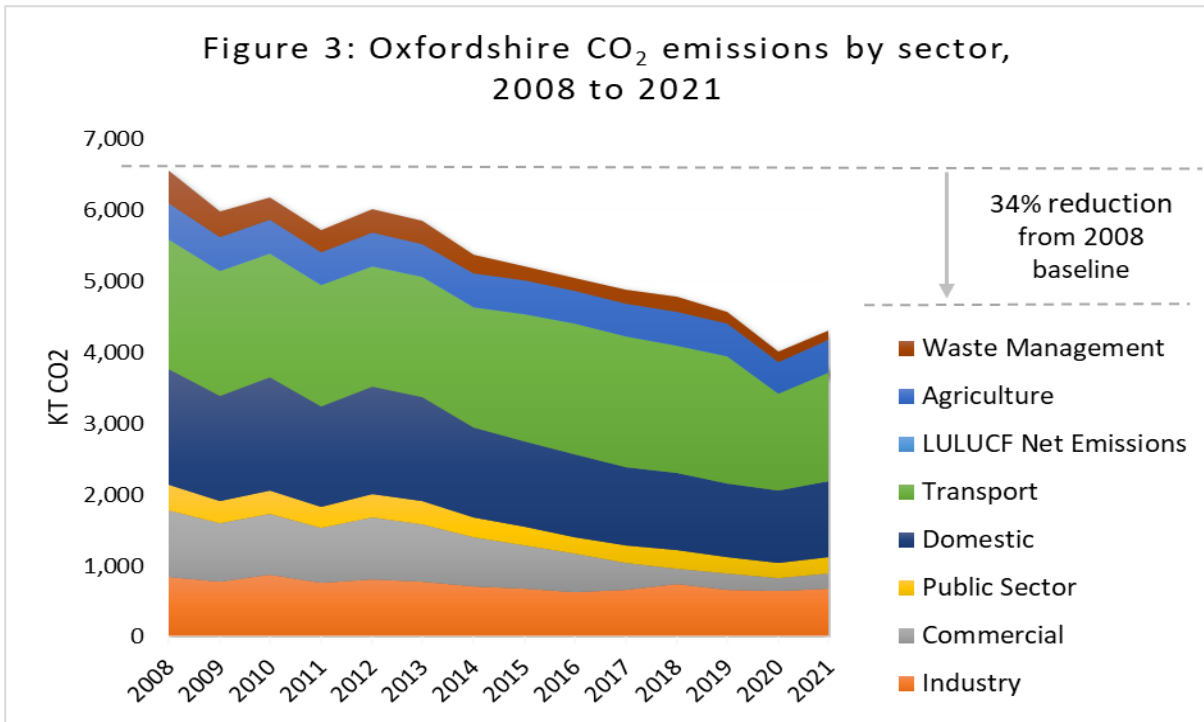
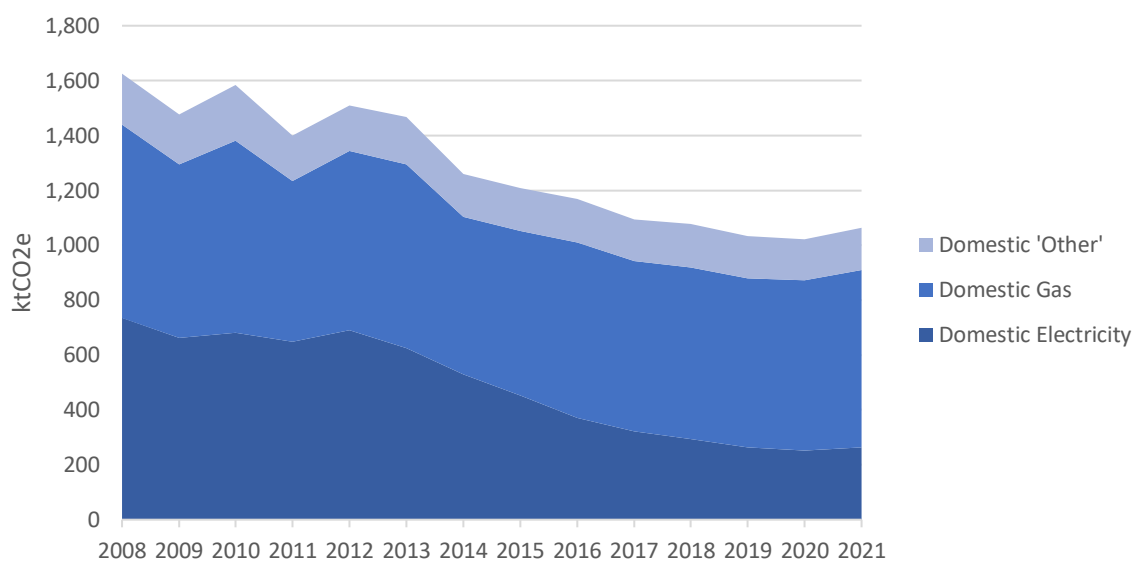


Figure 3b: Domestic emissions by source



MONITORING PROGRESS TOWARD NET ZERO

Carbon Budgets

13. To inform progress toward the county's net zero target, the Oxfordshire Net Zero Route Map and Action Plan has provided five-yearly countywide carbon budgets (starting from 2021 and ending in 2050), based on combined projected emissions of carbon dioxide across the industrial, commercial, domestic and transport sectors⁷.
14. The carbon budgets are the maximum quantity of cumulative emissions which can be emitted within the five-year period that will not exceed the projected pathway and provide a useful tool to monitor progress.
15. A total of 3,704 kt CO₂ was emitted from these sectors in 2021, accounting for 22% of the 2021-2025 budget. The ONZRMAP indicates an annual average reduction of 9% will be needed between 2021 and 2025 to stay within the 5 year cumulative budget. Progress against this metric will be reported in future annual updates as the data becomes available.

⁷ NB: The budgets only include CO₂ emissions, the dataset presented in the previous section included emissions of nitrous oxides and methane.

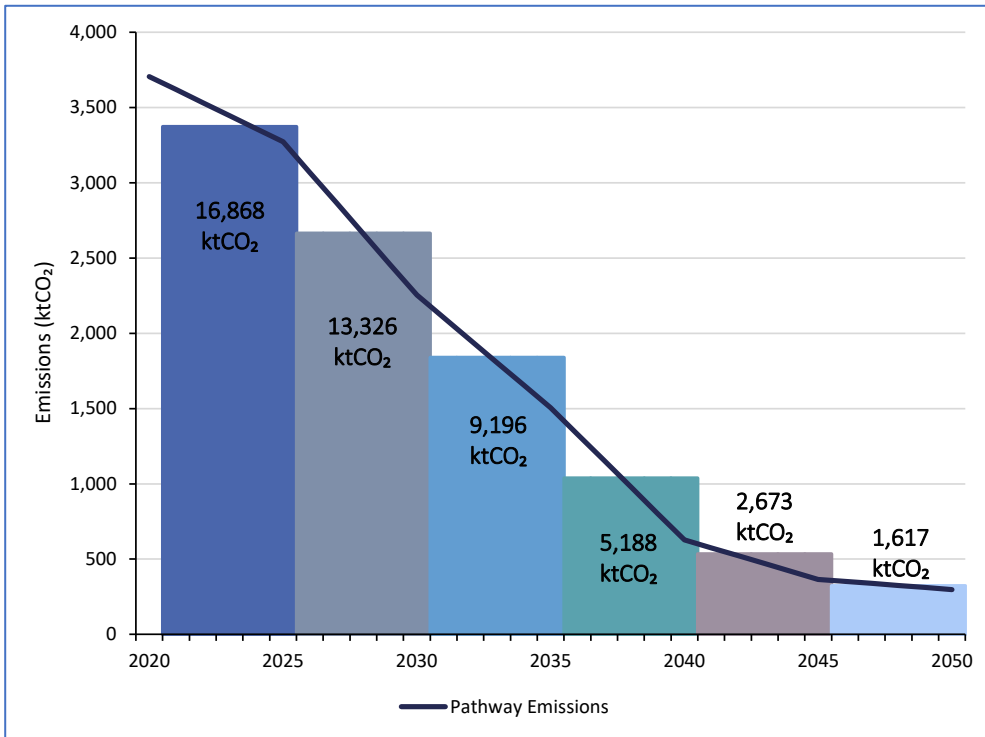


Figure 4: Oxfordshire five yearly carbon budgets

16. EAG is asked to note that the pathway and targets set out in the Net Zero Route Map and Action Plan, and therefore used in developing the carbon budgets, incorporate key national policies and target dates for implementation in place at the time the report was completed. Government has recently indicated the intention to amend (push back) some of these implementation dates, for example:

- phase out of gas boilers now aiming for 80% phase out rather than complete phase out by 2035
- ban on off-grid oil burners delayed to 2035, again with an 80% phase out target by that date
- ban on sale of new cars with combustion engines moved from 2030 to 2035.

The changes to government policy are likely to make it more challenging to meet our countywide targets.

17. EAG are asked to agree that the target dates are maintained within the Oxfordshire programme to support and enable delivery of net zero emissions by 2050 at latest.

TAKING ACTION TO DECARBONISE

18. Work is underway to implement the priority actions included in the first delivery phase of the Joint Action Plan, and an update will be taken to the November meeting of the FOP.

19. Once the programme is fully established, we recommend that the annual emissions report is presented alongside an annual action plan progress report and used to review where ongoing joint action is most effectively focussed.

Conclusion

20. Sources in Oxfordshire accounted for 4,312.6 kt CO₂e in 2021 (latest available data), 7% higher than in 2020 but 6% lower than in 2019 – the COVID-19 pandemic has a widespread impact on emissions which was seen across most UK local authority areas.
 21. Emissions have fallen by 34% since 2008 (the baseline year for the countywide target).
 22. EAG are asked to:
 - a. note the reported emissions data for Oxfordshire;
 - b. endorse the retention of targets set out in the sectoral pathways in the Oxfordshire Net Zero Route Map and Action Plan, noting the potential impact that national policy changes may have on these.
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