

The Marlow Environmental Performance Index 2022

April 2022

The Marlow Environmental Performance Index is an annual digest of key sustainability indicators for Marlow, Buckinghamshire, published by Marlow Town Council.

Highlights of the 2022 edition

This second edition of the Marlow Environmental Performance Index introduces two new indicators.

The first is on greenhouse gas emissions per household both on a territorial and a consumption basis. This shows that while emissions within the parish itself are relatively low, the overall climate impact of Marlow households, including consumption, is some 30% above the Great Britain average.

This indicator is based on the Centre for Sustainable Energy's Impact Tool, which provides parish-level emissions estimates for the whole country. It replaces a previous indicator of household CO2 emissions within Wycombe District because since its replacement by the unitary Buckinghamshire Council this data is no longer collected.

A new PV solar indicator has been included thanks to local surveying work by Marlow Energy Group. This shows that, despite strong growth in the year to summer 2021, the share of households with rooftop panels in Marlow was still only half the UK average.

One of the biggest year-on-year changes was a dramatic improvement in air quality in 2020, coinciding with the Covid pandemic. Nitrogen dioxide pollution in Marlow fell so much that its level was within the legal limit at all monitoring stations for the first time in many years.

The amount of waste produced per household increased significantly in the year to March 2021, probably another impact of Covid and widespread working from home. The share of clean electric cars in Marlow grew very strongly again in 2020, reaching over 5% of all registrations, which is four times the national average.

Overall, Marlow's environmental performance is less good than the national average on eight out of the Index's 11 indicators. The number of indicators showing a deterioration in the latest reported year increased from one previously to four this year.

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How to interpret the Marlow Environmental Performance Index

The Marlow Environmental Performance Index provides quantitative evidence for sustainability status and trends in our town to support more informed discussions and decisions.





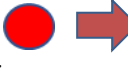






Each indicator is based on robust datasets maintained by the public or private sector. Every indicator except total GHG emissions reports two consecutive years to show any trend. All indicators show how Marlow relates to the wider country except for air pollution, for which the comparator is a legal standard.

In the Indicators Summary on p3 the circles show how Marlow compares with the wider country and the arrows show how Marlow's performance changed in the latest reported year. Green colouring represents better than the national average or an improvement. Red colouring represents worse than the national average or a deterioration. Orange represents the same or no change.

Many different datasets have been used to compile the index. This means that the geography of both Marlow and the wider country are defined differently for different indicators. The latest year reported also varies by indicator. This variability is the price of finding data sets that, individually, are robust, consistent over time, annually updated, and for which it is possible to focus just on Marlow, or a reasonable proxy for Marlow.

Marlow is represented in several indicators by the SL7 postcode, more than 90% of whose population lives in the settlements of Marlow and Marlow Bottom. Following creation of the unitary Buckinghamshire council the whole county is the smallest geographical area for which waste statistics are available. Indicators for waste generation and recycling rate have nevertheless been retained because waste is an important issue and because historical data suggest that Marlow's performance is close to the Buckinghamshire average.

Marlow Environmental Performance Index 2022 in Summary

- **1. Air Pollution**
Peak nitrogen dioxide air pollution in Marlow plunged by a quarter in 2020, falling below the legal objective for the first time in at least eight years, possibly much longer.
- **2. Greenhouse gas emissions**
On a consumption-basis, per-household emissions of greenhouse gases in Marlow are 30% higher than the GB average. Marlow's territorial emissions are lower, due to lack of industry or motorways in the Parish.
- **3. Electricity use and emissions**
Average household electricity consumption rose in Marlow rose in 2019, bucking the national trend, and was nearly one-third higher than across England.
- **4. Natural gas use emissions**
Average household gas consumption in Marlow rose a little in 2019, in common with the average across England. Marlow's average consumption remained more than two-fifths higher than across England.
- **5. Drinking water use**
Average water consumption per household in Marlow remained level in 2021 and was nearly one-fifth higher than the average across England and Wales.
- **6. Car Ownership**
The number of cars per household in Marlow fell slightly in 2020, and faster than the Great Britain average did, but the total number remained more than a third higher.
- **7. Carbon dioxide rating of cars**
The average carbon dioxide emissions rating of cars registered in Marlow fell by under 1% in 2020, with the gap between Marlow and the lower Great Britain average widening slightly.
- **8. Electric cars**
The share of very low emission cars (almost all electric) registered in Marlow increased by half to 5.3% in 2020 and remained nearly four times higher than the national average.
- **9. Waste generation**
The amount of household waste per person in Buckinghamshire increased by 7% in 2020/21, or double the rise across England, to stand more than 7% higher than the national average.
- **10. Waste recycling**
Buckinghamshire's household waste recycling rate fell 5% in 2020/21, faster than the English average, but the local recycling rate remained higher than the national one and just above the government target of 5%.
- **11. Rooftop solar PV capacity**
The number of rooftop solar electric installations in Marlow shot up by 41% in 2021, but overall penetration remained still only about half the UK average.

Marlow Environmental Performance Index 2022: The Indicators

Indicator 1

Air Pollution

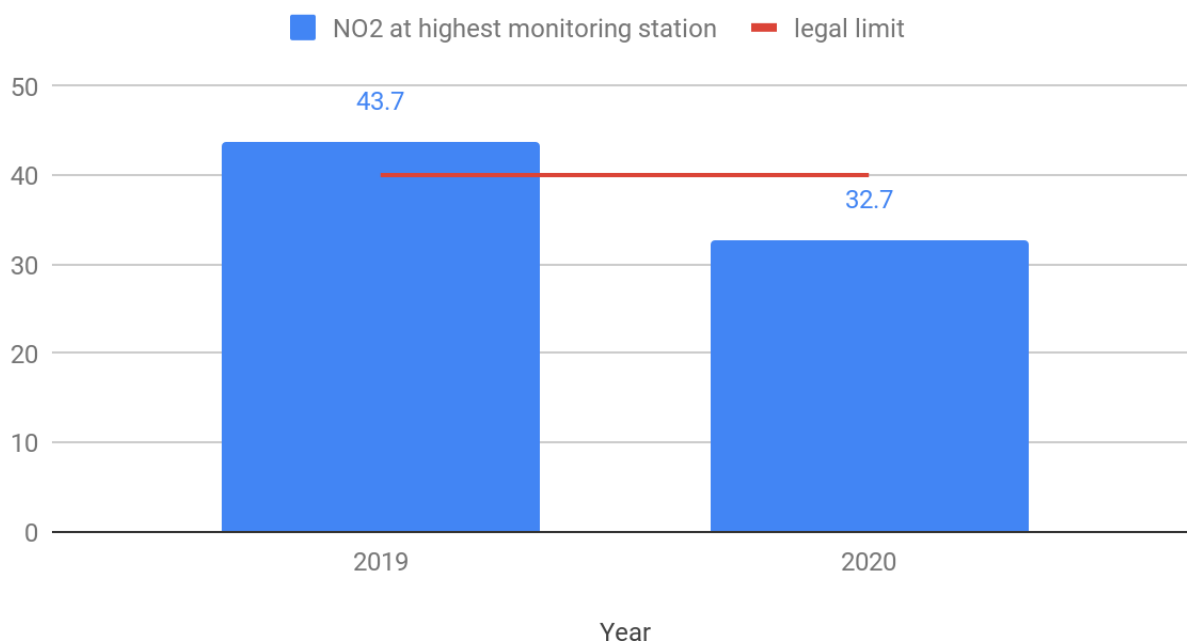
Poor air quality can harm health and the environment in many ways. Marlow town centre has been designated an Air Quality Management Area (AQMA) due to high levels of nitrogen dioxide (NO₂), a pollutant that harms human health and that is caused mainly by traffic emissions.

In 2020, the highest annual average level of NO₂ recorded in Marlow AQMA fell by 25% to 32.7 micrograms per cubic metre, coming within the legal limit of 40 micrograms for the first time since at least 2013. The scale of the reduction was clearly influenced by Covid lockdown falls in road traffic. The question is how much of the gain will be reversed after the pandemic.

Marlow Town Council has released its own Clean Air Plan (<https://www.marlow-tc.gov.uk/clean-air-plan/>), with the objective of eliminating illegal levels of NO₂ pollution by 2025, aimed at supplementing the work of Buckinghamshire Council.

These data are sourced from Buckinghamshire Council, which publishes annual air quality status reports (<https://www.wycombe.gov.uk/pages/Environment/Air-pollution/Air-quality-management.aspx>).

Peak nitrogen dioxide air pollution (ug/m³)



Indicator 2

Greenhouse gas emissions

Greenhouse gas emissions drive climate change. The government has set a national goal of net zero emissions by 2050, which means that any remaining emissions will have to be balanced by absorption.

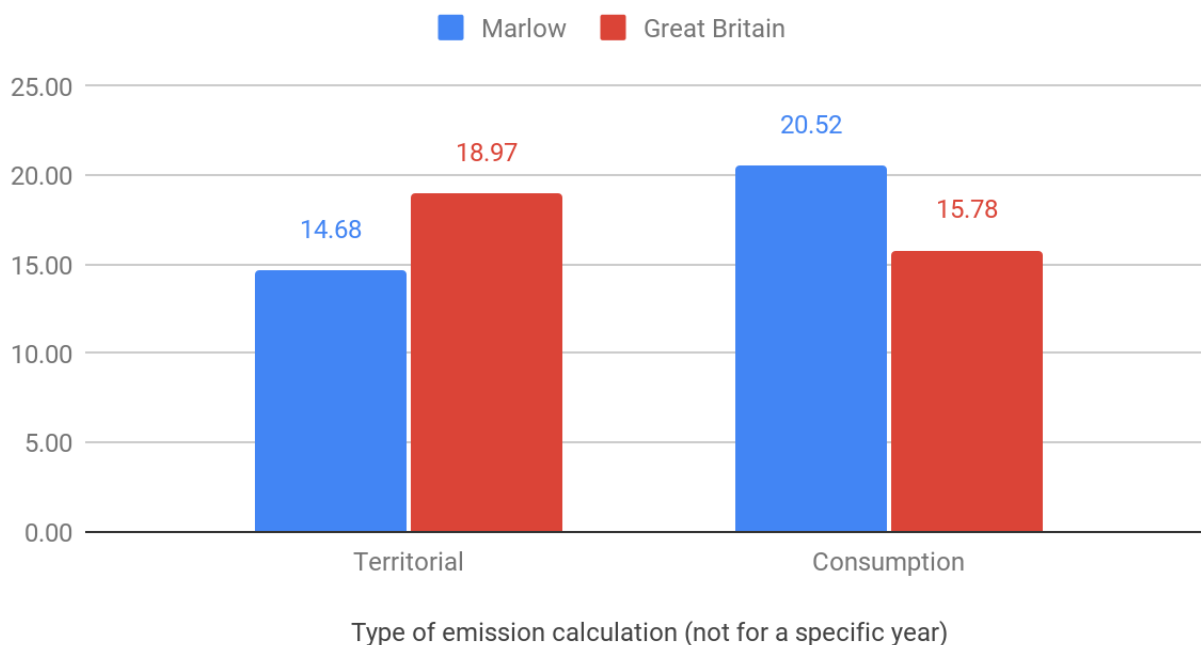
The Centre for Sustainable Energy has combined many data sets, together with modelling, to estimate both territorial and consumption emissions of greenhouse gases for individual parishes across the country. Territorial emissions count just greenhouse gases released in the geographic area; Consumption emissions count additionally all emissions “embedded” in goods and services consumed in the geographic area and are a truer measure of climate impact.

Marlow’s territorial emissions are nearly a quarter lower than the national average, reflecting the absence of major industry or roads in Marlow parish (most of the A404 close to Marlow falls in Little Marlow parish). However, Marlow’s consumption emissions are 30% higher than the GB average, reflecting much higher than average emissions relating to consumption of gas and electricity - as reflected in this index - but also other goods, services, including food and flights.

These data are sourced from Impact Tool, a community carbon calculator put together by the Centre for Sustainable Energy. The CSE presents all data as current and does not identify a specific year, nor yet provide a time series.

<https://impact-tool.org.uk/>

Greenhouse gas emissions per household (tCO₂e)



Indicator 3

Electricity use and emissions

Electricity generation and distribution has significant environmental impacts, especially the release of greenhouse gas emissions. This indicator measures the absolute amount of electricity consumed by the average household, and also the level of greenhouse gas emissions associated with that consumption.

Median household electricity consumption in postcode SL7 rose by 3% in 2019 even while the average across England fell by 1%. This meant that median household electricity consumption in SL7 was 34% higher than across England, compared with 29% higher in 2018.

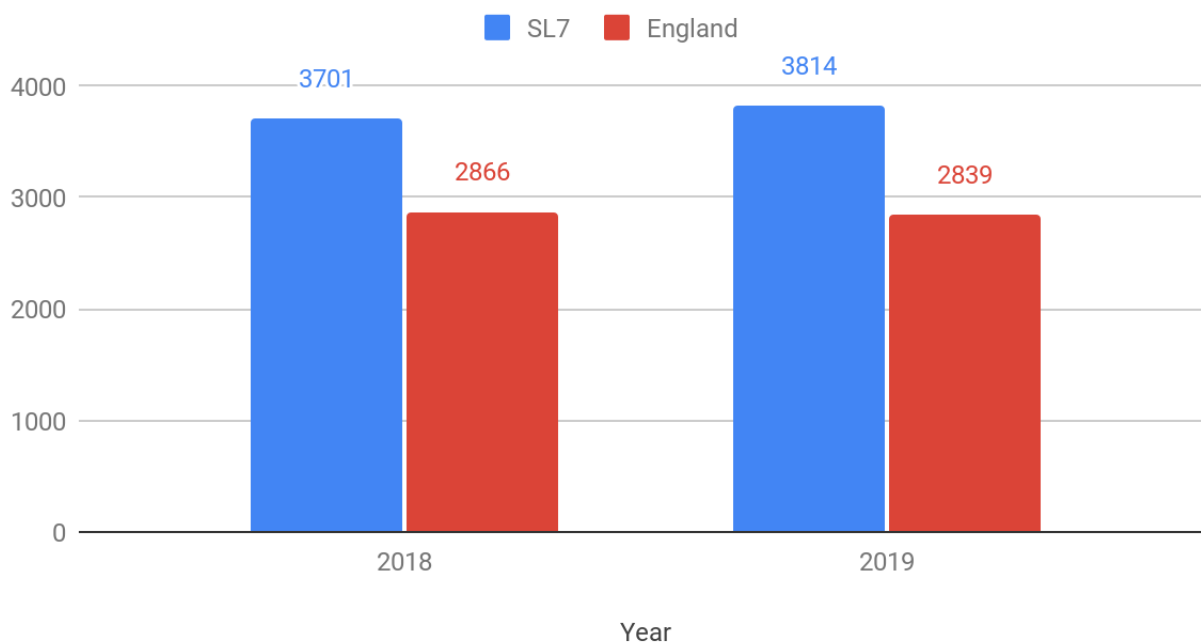
Despite the increase in usage, median SL7 household emissions of greenhouse gases associated with electricity consumption actually fell by 8% to 0.97 tonnes CO₂e, due to decarbonisation of the national electricity grid. The median across England fell by 10% to 0.73 tonnes CO₂e.

These data are sourced from UK government sub-national electricity data published by the Department for Business, Energy and Industrial Strategy here: <https://www.gov.uk/government/collections/sub-national-electricity-consumption-data>

The conversion from electricity consumed to associated carbon dioxide emissions was made using government conversion factors from here:

<https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

Median household electricity consumption (kWh)



Indicator 4

Natural gas use and emissions

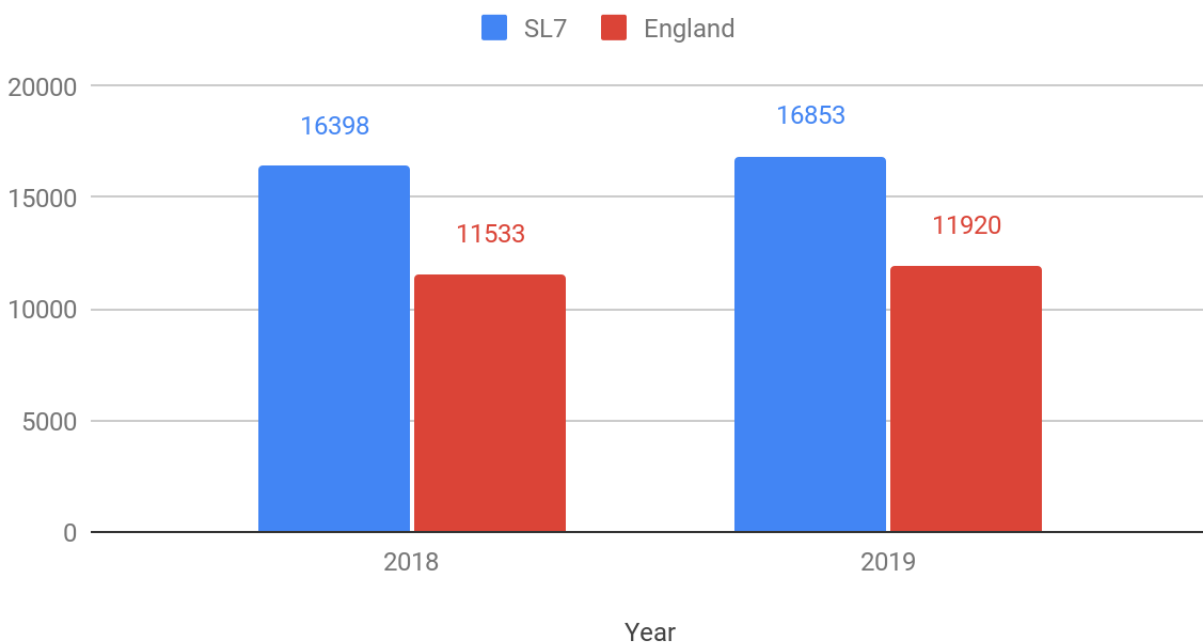
Natural gas is widely used by households for heating and cooking, like all fossil fuels producing climate altering carbon dioxide on combustion. Transitioning away from gas to alternatives like renewable hydrogen or electric heat pumps and electric induction hobs will be an important part of the UK's efforts to reach net zero carbon emissions.

Median household gas consumption in SL7 rose by 3% in 2019, about the same rate as across England, and was 41% higher than the English median in 2019, compared with 42% higher in 2018.

Median SL7 household greenhouse gas emissions associated with gas consumption rose from 3 to 3.1 tonnes CO₂e, while the median across England rose from 2.1 to 2.2 tonnes.

These data are sourced from the Department of Business, Energy and Industrial Strategy (BEIS) sub-national gas consumption data collection at: <https://www.gov.uk/government/collections/sub-national-gas-consumption-data>
The conversion from gas consumed to tonnes of CO₂ emitted was made using UK Government greenhouse gas conversion factors here: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>

Median household gas consumption (kWh)



Indicator 5

Drinking water use

Our drinking water supply has many environmental impacts, from lowering of water tables, construction of reservoirs, and maintaining and powering a massive distribution system. All drinking water consumed eventually has to be treated at sewage treatment works, which continue to cause pollution incidents across the country.

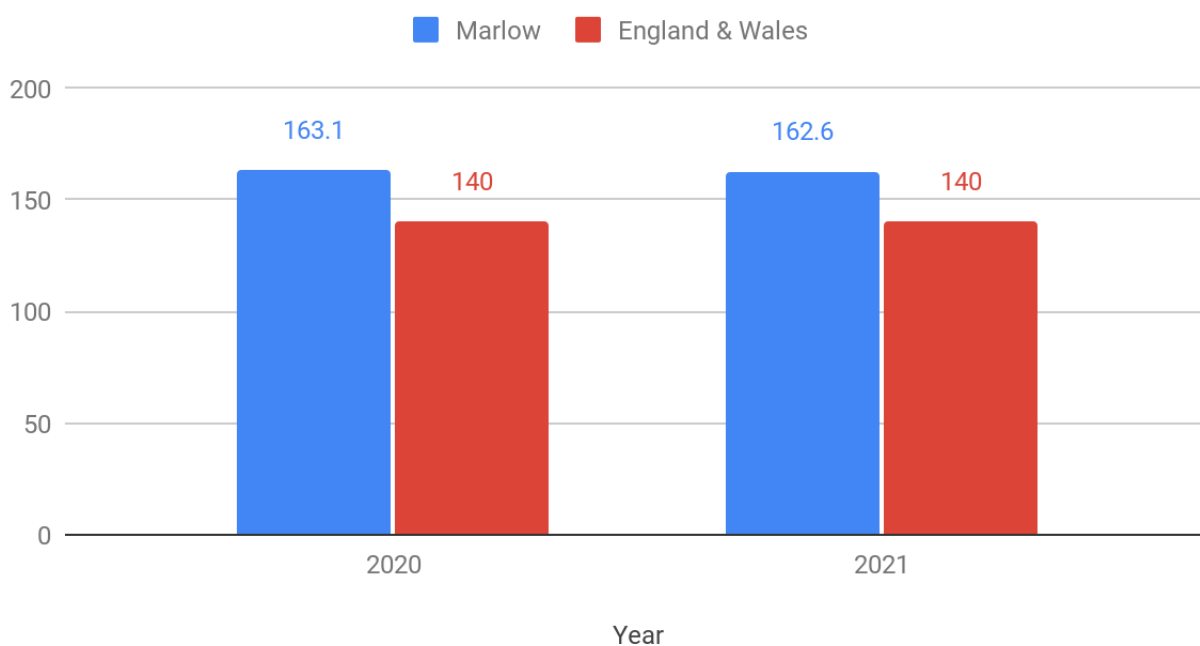
Average drinking water consumption in Marlow in the year to 1 April 2021 was 163 litres per person per day, very marginally down on the previous year. Average consumption in Marlow was about 16% higher than the average for England & Wales.

Domestic water consumption is strongly influenced by weather so single year changes don't necessarily reflect underlying change. However, per-person consumption in Marlow has been stable for five years, so there is no sign of any trend towards more efficient usage.

Per-person consumption in Marlow in the year to April 2021 was 24% lower in households with water meters than in those without: 144 vs 190 litres per person per day.

The data for water consumption in Marlow were supplied by Thames Water via a freedom of information request. The area covered includes all of Marlow Parish, a part of Marlow Bottom and Bisham, plus an area running west of Marlow to Hambleton. The figure for average daily consumption across England & Wales is drawn from a consultancy report published by the water industry regulator Ofwat here: <https://www.ofwat.gov.uk/wp-content/uploads/2018/05/The-long-term-potential-for-deep-reductions-in-household-water-demand-report-by-Artesia-Consulting.pdf>

Average drinking water consumption (m³/person/day)



Indicator 6

Car ownership

Vehicles have significant environmental impacts across their life-cycle, including not just CO2 emissions when they are driven but climate impacts during manufacture and disposal, and congestion. The number of cars per household is a measure of this wider impact. In order to reach net zero greenhouse gas emissions it is highly likely that the total number of cars (including those that emit little or no greenhouse gases when they are driven) will need to come down.

In 2020 the average number of cars per household in SL7 fell by nearly 2%, compared with a fall across Great Britain of 1%. But the total number of cars per household in SL7 remained 34% higher than across GB, compared with 34.8% in 2019.

Vehicle data were supplied by the Department for Transport.

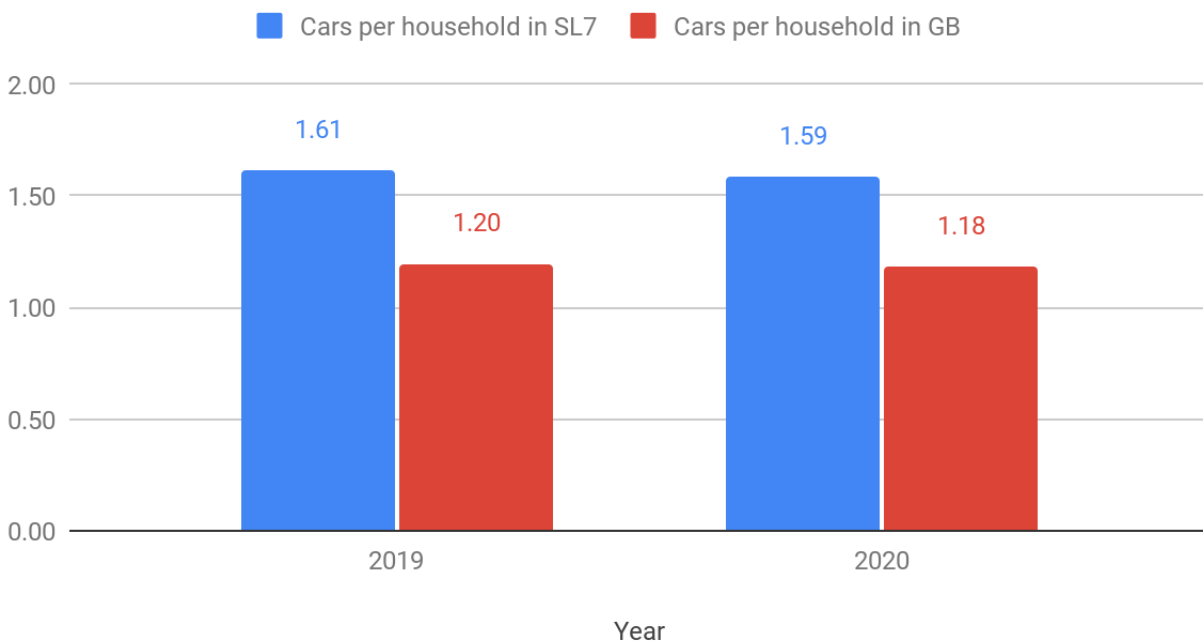
Data for SL7 households were sourced from the National Census

<https://www.nomisweb.co.uk/census/2011/qs417ew>

Data for GB households were sourced from the Office for National Statistics:

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/adhocs/008777estimatednumbersofhouseholdsinenglandandwalesscotlandandnorthernireland2004to2016>

Number of cars per household



Indicator 7

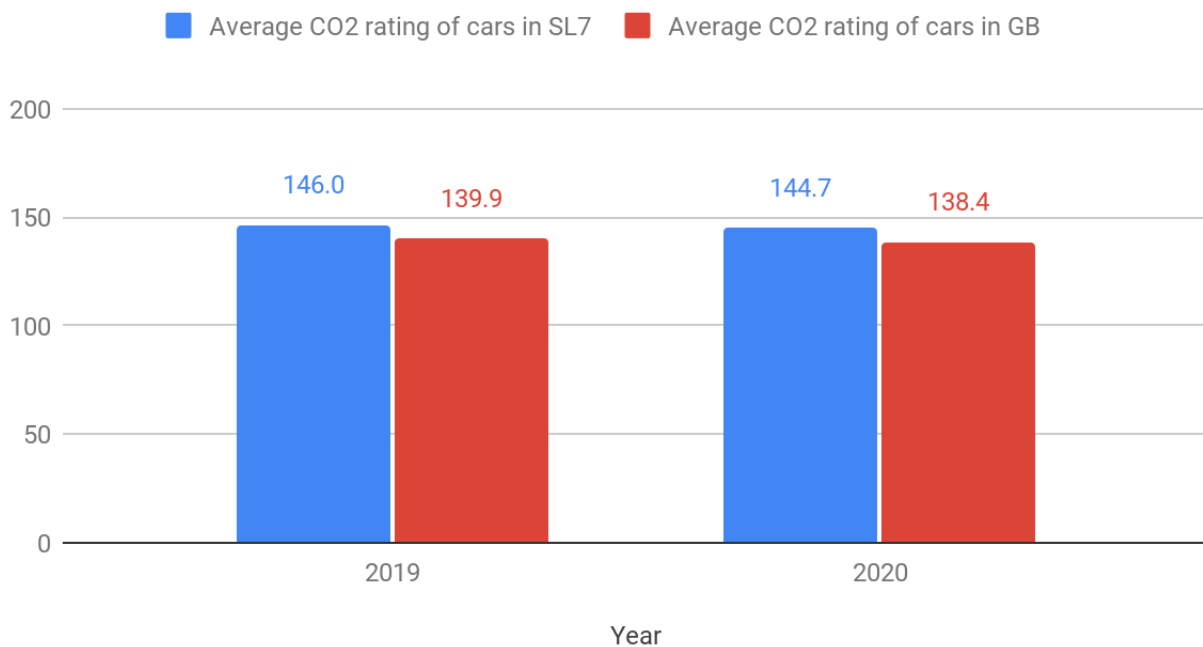
Carbon dioxide rating of cars

Emissions of carbon dioxide from car exhausts are an important contributor to climate change. The average amount of emissions per mile driven varies widely by vehicle age and model - newer and smaller cars tend to have lower emissions. The average emissions rating of cars needs to fall to nearly zero if the UK is to stop contributing to climate change.

The average CO2 rating of cars registered in SL7 fell by just under 1% in 2020, well behind the trend needed and slightly slower than a similar average fall seen across Great Britain. As a result the average car in SL7 emitted 4.6% more CO2 per kilometre in 2020, compared with 4.4% more in 2019.

These data were supplied by the Department for Transport.

Average car CO2 emissions rating (gCO2/km)



Indicator 8

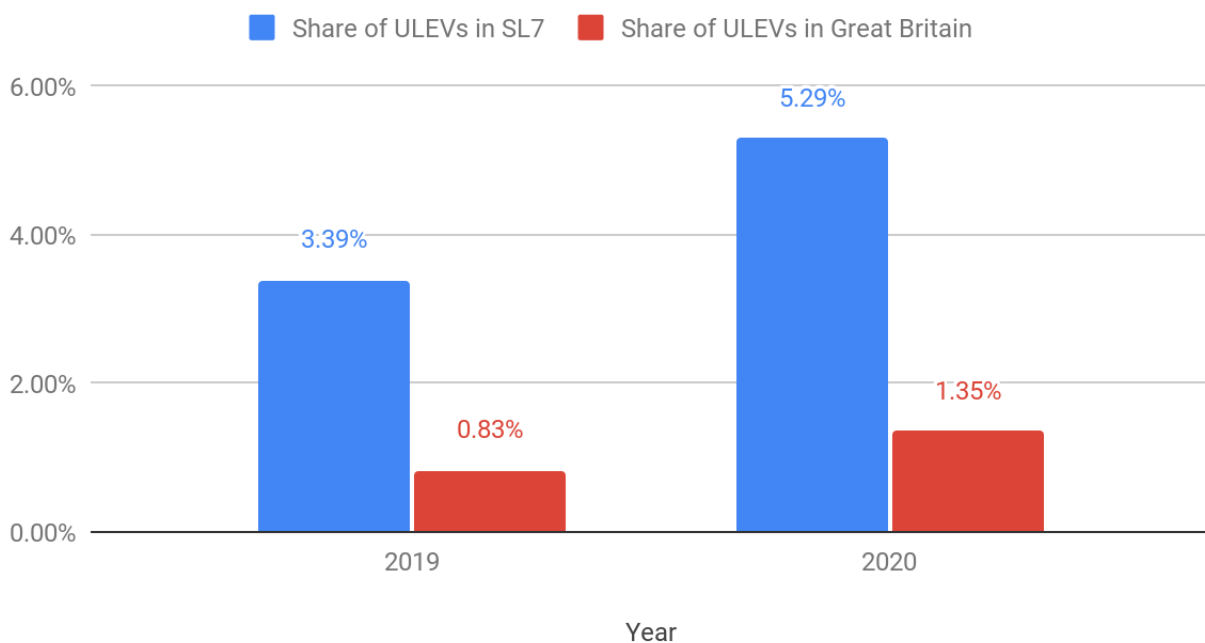
Electric cars

The government classifies vehicles that emit less than 75 grams of carbon dioxide per kilometre as ultra-low emission vehicles (ULEVs). This standard can be met with several technologies, but in practice virtually all those on Britain's roads currently are plug-in electric cars, which have zero tailpipe emissions of pollutants and climate-altering carbon dioxide.

At the end of 2020 the share of ULEVs among all cars registered in postcode SL7 was 5.3%, up by more than half on 2019 and nearly four times more than the GB average.

These data were supplied by the Department for Transport, and adjusted for activity by Harleyford-based specialist electric vehicle leasing company Drive Electric, without which the numbers for SL7 would be exaggerated.

Share of ultra-low emission vehicles



Indicator 9

Waste generation

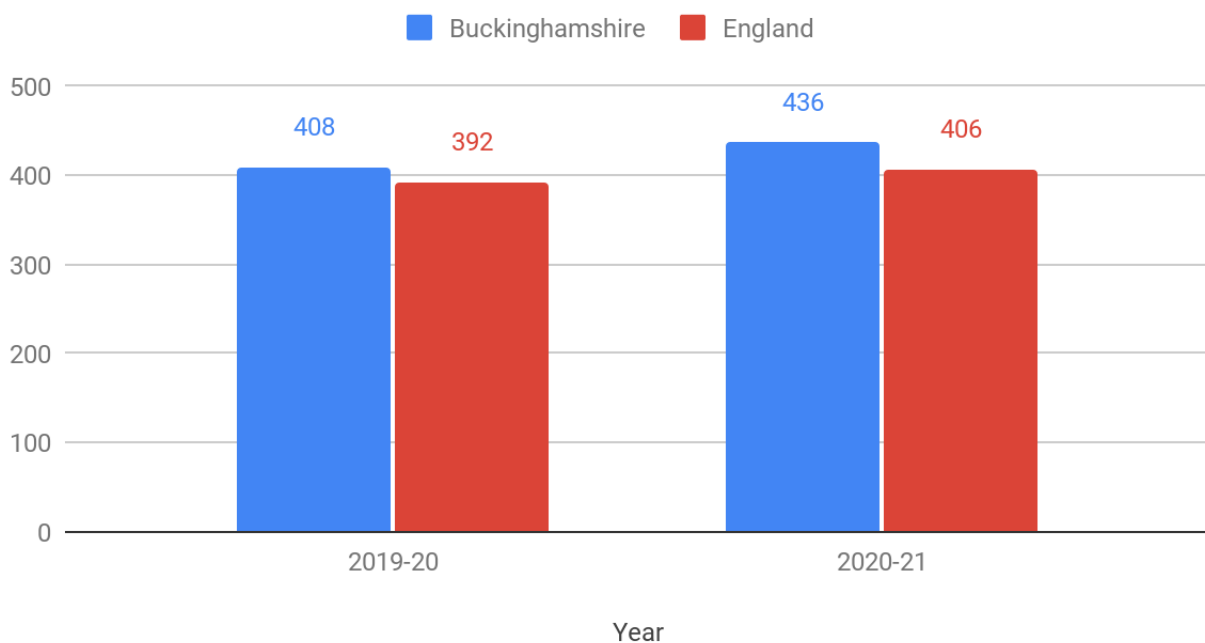
The amount of household waste produced is an indicator of how much “stuff” people are using and how quickly they are disposing of it. More waste generation also means greater environmental impacts from managing that waste.

No Marlow-specific household waste data are collected, and this indicator uses Buckinghamshire as a rough proxy. Waste data for the old Wycombe District that was used previously showed Wycombe (of which Marlow accounted for 11% of population) was roughly in line with Buckinghamshire as a whole.

The amount of household waste collected per person in Buckinghamshire jumped up by nearly 7% in 2020/1. Waste generation increased by only half as much across England. Changes to behaviour during Covid lockdowns is thought by Buckinghamshire Council to be the main cause - waste generation fell in the previous few years.

These data were supplied by Buckinghamshire Council.

Waste collected per person (kg)



Indicator 10

Waste recycling

One of the UK Government’s main environmental policies is to shift from a throwaway society to a more circular one. Recycling helps achieve this by converting waste into raw materials to be made into new products.

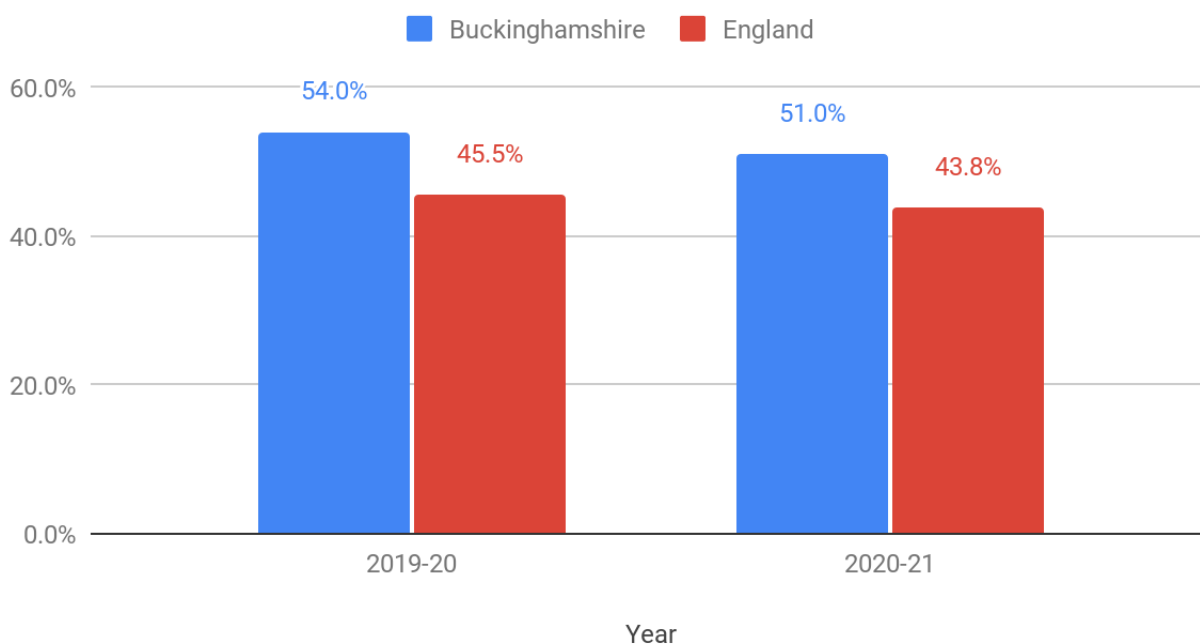
No Marlow-specific household waste data are collected, and this indicator uses Buckinghamshire as a rough proxy. Now discontinued waste data for the old Wycombe District showed Wycombe (of which Marlow accounted for 11% of population) was roughly in line with Buckinghamshire as a whole.

The household waste recycling rate in Buckinghamshire fell by 5.5% in 2020/21, a larger amount than the nearly 4% fall in the recycling rate across England. Buckinghamshire Council believes this was largely due to increased waste generation plus disruption to waste services caused by the Covid pandemic.

Despite the fall in its recycling rate in 2020/21 Buckinghamshire still recycled above the national objective of 50%, whose target date was 2020, whereas England as a whole did not. On the other hand, Buckinghamshire is now far from its own target of 57% recycling, which it aimed to achieve by 2016/17.

These data were supplied by Buckinghamshire Council.

Household waste recycling rate



Indicator 11

Solar PV installations

Domestic solar is a renewable electricity technology that can help to decarbonise the GB electricity grid by 2035. Rooftop solar panels can greatly reduce a household's demand for grid electricity (which still has an average carbon intensity of over 200gCO₂e per kWh consumed), as well as power bills. Combined with a battery or electric car, solar panels can also help households to store renewable power when it is being produced for later consumption, in some cases even becoming independent of the national grid.

The number of solar PV installations in Marlow shot up by nearly 42% in 2021, but still only to a relatively small number of 17 per 1,000 households, which was less than half the average rate across the whole of the UK.

The UK data were sourced from BEIS solar photovoltaics deployment statistics, with the 0-4kW capacity category providing a proxy for domestic solar

<https://www.gov.uk/government/statistics/solar-photovoltaics-deployment>

The Marlow data were provided by Marlow Energy Group (MEG), based on its own annual ground-based survey of Marlow Parish.

Data for number of UK households were sourced from the Office for National Statistics:

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/datasets/familiesandhouseholdsfamiliesandhouseholds>

Data for number of Marlow households were sourced from the National Census

<https://www.nomisweb.co.uk/census/2011/qs417ew>

Domestic solar PV (installations per 1,000 households)

