Dartmoor National Park Greenhouse Gas Assessment

Summary Report

May 2023

The Greenhouse Gas Assessment for Dartmoor National Park

A baseline Greenhouse Gas (GHG) footprint assessment has been carried out by Small World Consulting for the UK's National Parks. The footprint assesses GHG emissions relating to the consumption of all goods and services by local residents, businesses and visitors, in addition to land-based emissions. The assessment is consumption-based, accounting for all emissions produced directly in Dartmoor National Park as well as indirect emissions embodied in goods, services and travel patterns of residents, businesses and visitors within Dartmoor. It is the most honest and accurate assessment of Dartmoor's carbon footprint to date.

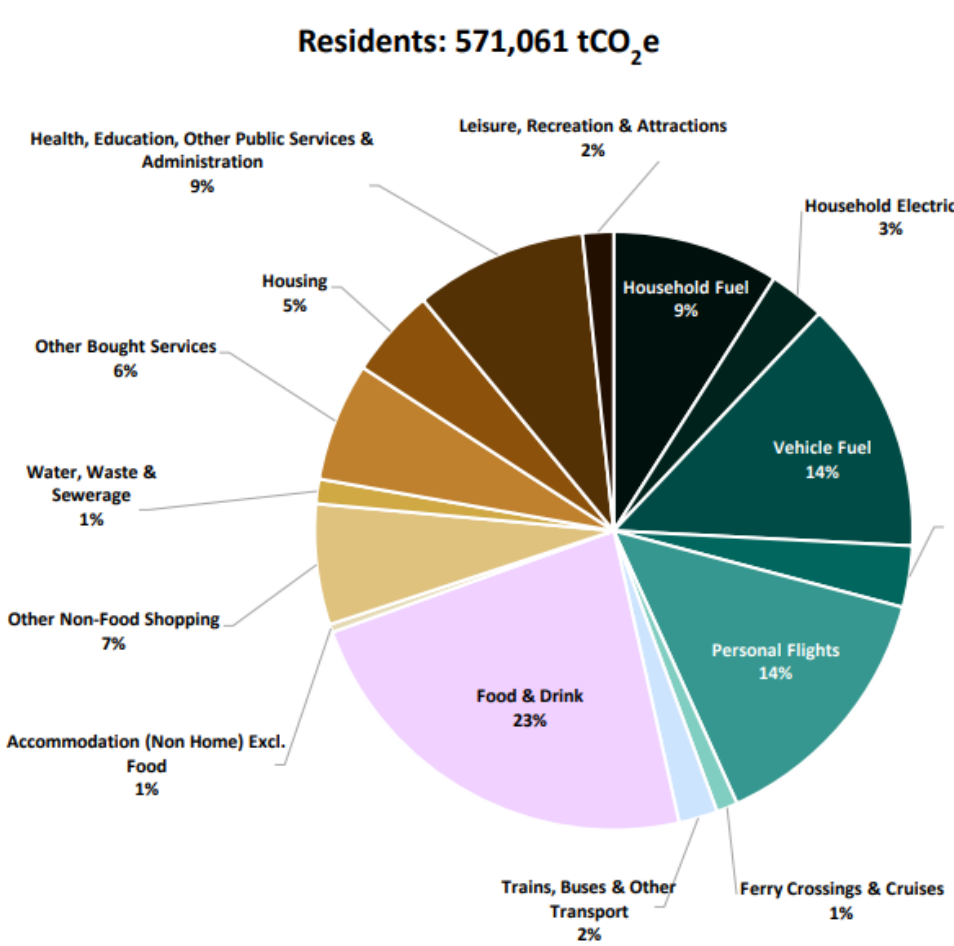
By taking the consumption-based approach, this report also assesses indirect GHG emissions embedded in the supply chain of goods and services consumed, which better reflects the full climate impact of people's lifestyles. The most important of these are the impacts of food, of other purchased items (such as cars, clothes, IT equipment, household goods and furnishings), and of residents' and visitors' travel to and from the National Park.

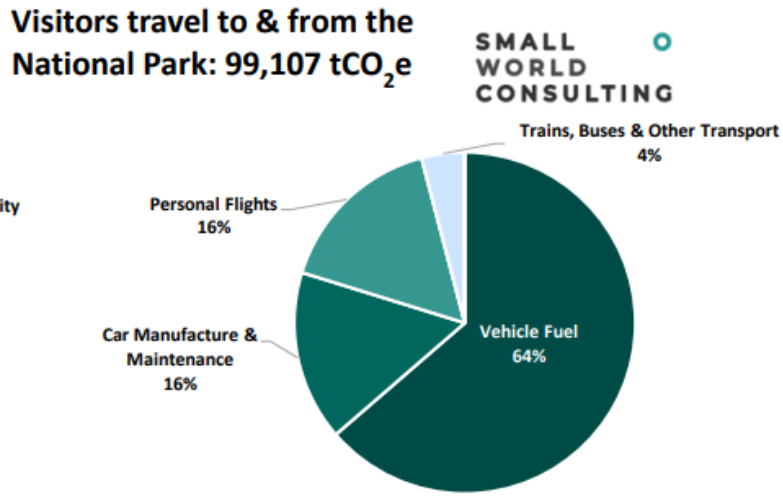
The headline annual emission figures for the Dartmoor National Park are:

- Emissions from residents – **571,061 tCO_2e** (15.3 tCO_2e per person per year)
- Emissions from visitors while in the National Park – **60,023 tCO_2e** (17.5 $kgCO_2e$ per visitor per day)
- Emissions from visitors travelling to/from the National Park – **99,107 tCO_2e** (38.4 $kgCO_2e$ per visit)
- Industry emissions – **207,523 tCO_2e**
- Land use emissions (non-CO2, including livestock and fertiliser) **159,193 tCO_2e**

Particular characteristics of Dartmoor National Park contribute to these trends:

- the per capita footprint of Dartmoor's residents is 24% higher than the UK average due to a number of factors, the higher level of wealth in the National Park compared to the rest of the UK, further amplified by the rural nature of the landscape and the associated travel within.
- The Dartmoor residents' consumption of goods and services is estimated to be 12.7% above the UK average per capita (excl. public services), which is comparable to all National Parks and AONBs on the current programme. Principal reasons for this are higher average wealth and spending among Dartmoor residents and the high proportion of retired population with high health expenditure, compared to the UK average.
- The visitors' footprint while in the National Park is dominated by food (50%), followed by driving (14%) and non-food shopping (12%). Estimated average mileage travelled on land to get to Dartmoor (around 110 miles) is just below the average across all National Parks and is dominated by cars,
- The industry footprint (Figure 5) is dominated by production (35%) and agriculture & forestry (28%).
- The footprint of land use contains both carbon sources (e.g. emissions from livestock, synthetic fertiliser use, degrading peat soils) and carbon sinks (including carbon sequestration in soils and biomass through woodland creation, peatland restoration and regenerative agriculture practices)





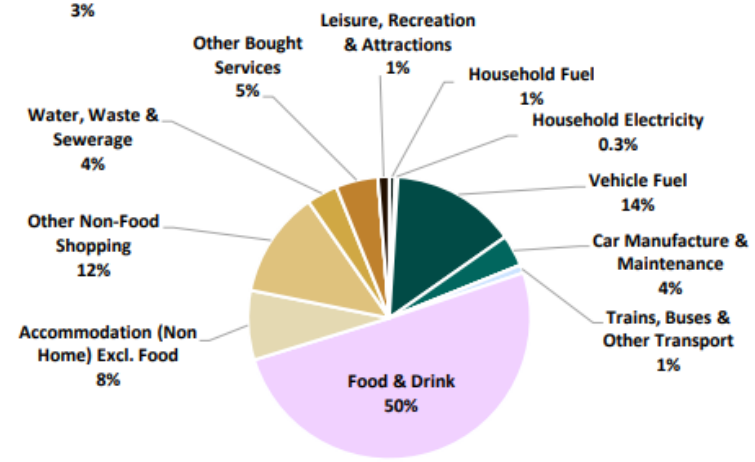


Figure 2: (left) Residents' GHG emissions in Dartmoor National Park by percentage

Figure 3: (top right) Visitors' GHG emissions on the way to & from Dartmoor National Park by percentage

Figure 4: (bottom right) Visitors' GHG emissions while in Dartmoor National Park

To indicate the scale of annual GHG emissions from the Dartmoor residents and visitors, you would need to plant an area around the size of 1,970 Premier League football pitches (1,407 ha, or 1.5% of the National Park's area) with broadleaf trees, and let them grow for over 100 years, to mitigate the combined GHG emissions of the regions' residents and visitors for the single year of 2019.

Target areas for action

The recommendations in the report focus on six categories of GHG emissions considered to be most relevant for action at the National Park level. This excludes some aspects of the overall carbon footprint such as resident's travel outside the National Park and use of health and education services (apart from the buildings' energy use, which is included), as these are considered outside the scope of influence or will be dealt with by national policy and action.

The target categories are:

- Energy consumption by residents, visitors and industry (driving, central heating, electricity use, and other forms of direct energy consumption), including emissions in fuel supply chains
- Food and drink consumed by residents and visitors
- Other goods purchased by residents and visitors (e.g. clothing, electronic equipment, furniture, soft furnishings, and cars)
- Visitor travel to and from the National Park (excluding flights; including embedded footprint of cars)
- Land use non-CO_2 component (including emissions from livestock and fertilisers)
- Land use CO_2 component (including both emissions from degrading mineral soils and peatlands and sequestration by woodlands, individual trees, hedges, mineral soils and healthy peatlands)

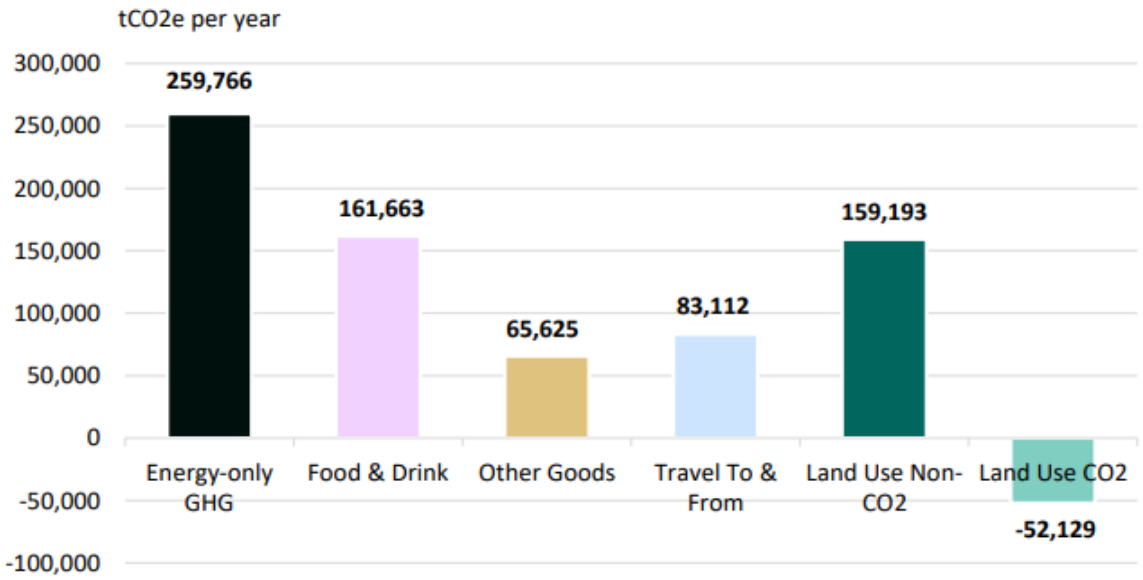


Figure 20. GHG emissions for the DNP by six target emission areas

Most of these emissions are not directly within the management responsibilities of the National Park Authorities but are where efforts should be focused for partnership work with local authorities and a wide range of stakeholders to meet the net-zero targets.

Net Zero Pathway for Dartmoor National Park

The report provides a recommended pathway to Net-Zero in line with the international commitments made in the Paris Agreement to limit global temperature rises to 1.5 degrees, and the UK's targets for specific sectors.

The net-zero pathway is derived from science-based assessments, including: the UK's Sixth Carbon Budget; Tyndall Carbon Budget Tool; UK's National Food Strategy; and UNFCCC Paris Agreement. The proposed emissions reduction and carbon sequestration targets require immediate, ambitious action to be taken across all six emission categories.

In order to meet these ambitious, science-based commitments, the following emissions reduction targets have been identified for Dartmoor National Park to 2050:

- **Sustainable energy – 14.3% pa** (per annum) cut in emissions arising from energy usage by residents, visitors and industry
- **Sustainable food & drink – 5% pa** cut in emissions arising from consumption of food and drink
- **Sustainable purchasing – 5% pa** reduction in emissions from other goods purchased by residents and visitors
- **Sustainable travel – 10% pa** reduction in emissions from visitor travel to and from the National Park
- **Sustainable agriculture** – **5% pa** cut in emissions from livestock and fertilisers
- **Sustainable land use** – **a net reduction of 10,519 tCO_2e emissions pa** from restoring degraded peatlands and mineral soils, and increasing sequestration of carbon in healthy soils, woodlands, and other vegetation:
    - Woodland creation (350 ha pa created)
    - Peatland restoration (737 ha pa restored)
    - Agroforestry (59 ha pa rolled out)
    - New hedgerows (3 ha pa created)
    - Adding legumes to improved grassland (426 ha pa rolled out)
    - Cover cropping (30 ha pa rolled out)

If the report's recommendations are followed, and using 2019 as the baseline year, Dartmoor National Park is projected to reach net zero GHG emissions by 2036. However, the high levels of ambition for the different sectors required to achieve the required cuts in emissions are likely to take several years to achieve, particularly as decarbonisation trends to date have been relatively small in magnitude compared to what is required. These factors are expected to push the projected net zero year back until the early 2040s, which is illustrated in the figure below. Nevertheless, the trajectories for each of the six components of the target are still expected to become steep and challenging in the coming years,

reflecting the severity of the climate emergency. We note that the net zero date also depends on the unique circumstances for each landscape, and should therefore not be taken in isolation as a level of ambition.

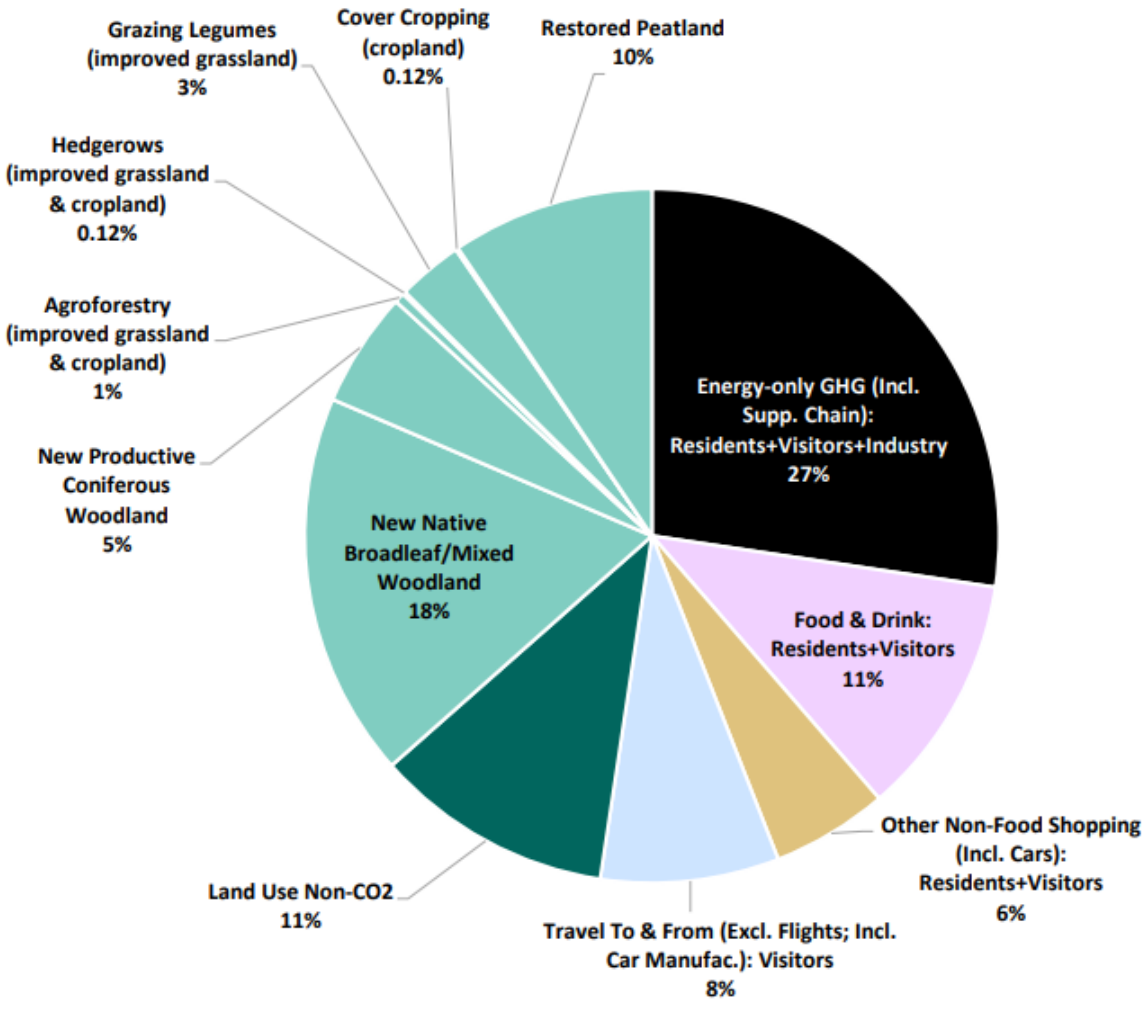


Figure 21. Percentage breakdown of the projected cumulative reduction net annual GHG emissions for the DNP between 2019 and 2050

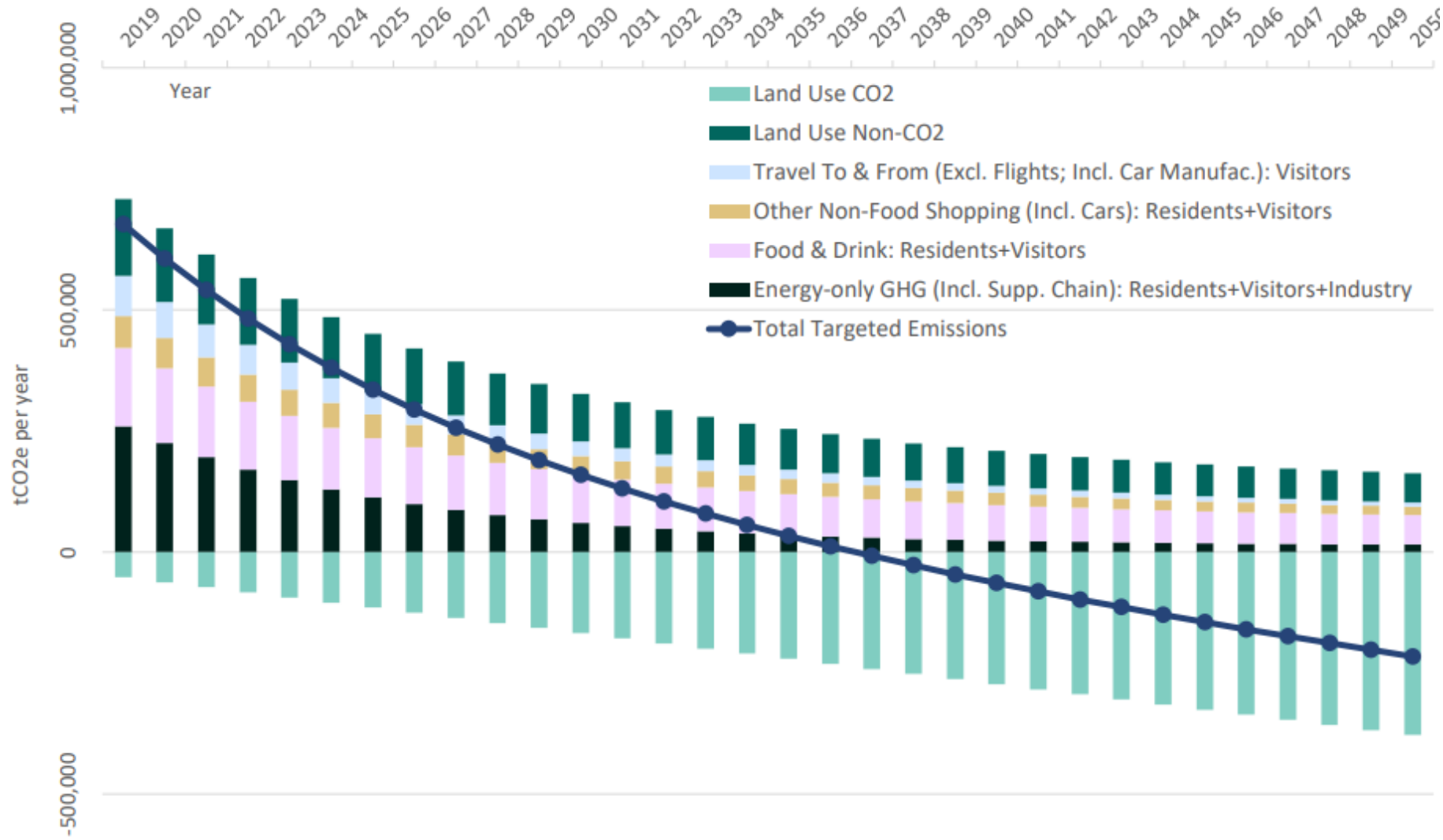


Figure 22. Dartmoor National Park: Pathway to Net Zero