CAMDEN LONDON BOROUGH COUNCIL

Consumption Emissions Profiling

August 2021

Anthesis Camden

CONTENTS

Anthesis

EXECUTIVE SUMMARY

Background & Context

Consumption-based emissions accounting is an approach to allocating carbon emissions which contrasts to Production, or Territorial approaches to emissions calculation. When applied to a local authority area, it is based on the spending on goods and services, regardless of where in the world the emissions arise.

This Consumption-based reporting offers several benefits, including fully accounting for the impact of goods and services consumed by residents, which often extend well beyond the area's boundary.

In Camden Council's Climate Action Plan, it was agreed that the Council would undertake an assessment of consumption-based carbon emissions emissions in the borough. This will supplement the existing production-based emissions profile. This work aims to:

- Estimate Camden's consumption-based emissions, identifying key sources
- Highlight key policies and organisations relevant to these emissions
- Give recommendations on next steps in reducing such emissions

Consumption Emissions Analysis

Consumption-based emissions were calculated through a "top down" method whereby national consumption emissions data was scaled down using local economic data. **The estimated consumption-based emissions for the Camden area totalled 2,523,662 tCO2e**. This is 2.4 times more than the district's direct & indirect territorial based, 'in boundary' emissions.

Key emissions sources were identified in line with the classifications provided within the economic data (Figure 0.1). Change in emissions over time was also observed, with a general decline since 2008.

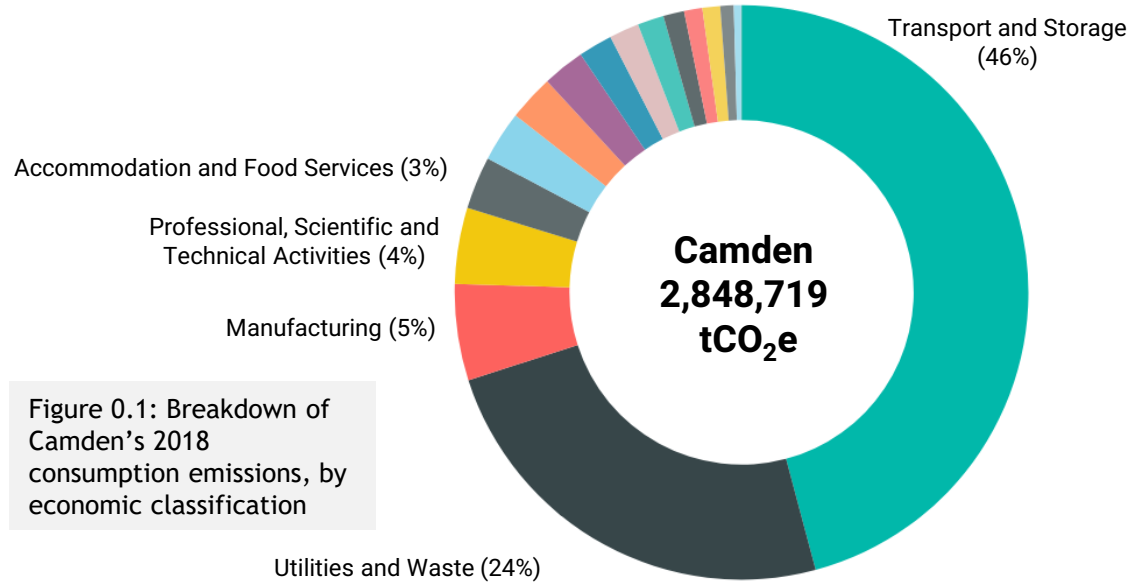


Figure 0.1: Breakdown of Camden's 2018 consumption emissions, by economic classification

Policy Context and Organisational Research

Emerging and existing policy will affect Camden's consumption-based emissions, and the council's ability to reduce them, and an overview is provided for each of the top 5 sources. To address the borough's consumption-based emissions, the council will also need to engage local businesses - examples of existing action are provided in a supplementary document.

Recommendations

In tackling consumption-based emissions, the council should prioritise action around Transport, Utilities and Waste, but also review opportunities for synergies with existing actions in the Climate Action Plan. The council now needs to engage with business and community groups, using existing networks such as the Camden Climate Change alliance to drive action. Reporting on consumption emissions will also drive accountability and performance improvement.

01 Introduction & Context

This chapter sets out the project aims, objectives and background. We also provide detail on the consumption-based approach to emissions reporting, compared to production and territorial based approaches.

1. INTRODUCTION AND CONTEXT
AIMS AND OBJECTIVES

This report has been commissioned by the London Borough of Camden. In November 2019, Camden Council formally declared a Climate and Ecological Emergency, recognising the threat of climate change and irreversible damage to ecosystems. The Council committed to help make Camden net zero carbon by 2030.

As part of Camden Council's Climate Action Plan, it was agreed that the Council would undertake an assessment of consumption-based emissions in the borough and provide insight into the key areas where the Council can help to influence these emissions. This report, and the associated supplementary documents, aims to support the Council in driving reductions in consumption-based emissions by:

1. Quantifying the **Borough's consumption-based carbon emissions** using a range of existing national and regional datasets. This includes:
    1. Analysis using regional economic output data, Gross Value Added (GVA) data and Standard Industrial Classification (SIC) data to derive consumption-based emissions for the borough
    2. Identification and discussion of the key impact areas
    3. Further analysis of household consumption emissions based on scaling down national household expenditure

2. Highlighting some of the **key policies and organisations** relevant to consumption emissions. Includes:
    1. A review of policies relevant to the largest identified sectors, to provide insight into potential future changes in emissions
    2. An assessment of large companies based in Camden and a profile of key organisations identified (See Supplementary Report)

3. Concluding with **next steps and recommendations** for the key actions which could be taken by Camden to embed the findings of the report and begin tackling the borough's consumption-based emissions.

1. INTRODUCTION AND CONTEXT
APPROACHES TO EMISSIONS ALLOCATION

There are different approaches to allocating emissions to a particular area. These different methods are categorised into production, territorial and consumption-based approaches- and are compared in Table 1.1.

The Camden Climate Action Plan includes an emissions profile based on a territorial emissions approach. As has been mandated in Camden's Climate Action Plan, it is also possible to estimate Camden's emissions using a consumption-based approach. Taking this approach means the emissions profile includes the emissions caused as a result of products and services produced elsewhere but consumed in within the boundary of Camden.

The term 'consumption emissions', used in this report, designates emissions associated with final domestic demand, i.e. final consumption (households, non-profit institutions and government), gross fixed capital formation, changes in inventories and direct purchases abroad by residents.

Such emissions can also be defined as demand-based emissions. Further detail on this approach can be found in the *OECD Methodology*. In the following pages, we further introduce the concept of consumption-based emissions. Our full analysis is found in Chapter 2.

Inventory	Definition
Production	Production figures represent emissions produced by UK residents and industry whether in the UK or abroad but exclude emissions within the UK which can be attributed to overseas residents and businesses. International aviation and shipping emissions are allocated to countries based on the operator of the vessel.
Territorial	Territorial emissions includes emissions which occur within the UK's borders. GHG emissions emitted in international territory, i.e. from international aviation and shipping, are reported as memorandum items.
Consumption	Consumption emissions refer to emissions that are associated with the spending of UK residents on goods and services, regardless of where in the world the emissions arise, and those which are directly generated by UK households through private motoring etc.

Table 1.1: Definitions of different emissions inventory calculation approaches, using the example of the UK

1. INTRODUCTION AND CONTEXT
CONSUMPTION-BASED EMISSIONS

C40 cities analysis on consumption emissions of urban areas provides a useful framework for conceptualizing consumption-based emissions. This guidance provides the following equation, which is visually presented in the diagram on the right.

CONSUMPTION = PRODUCTION - EXPORT + IMPORT

This can be interpreted as Camden's consumption emissions equaling the emissions that are produced within the local authority boundary minus those exported to meet demand elsewhere, plus emissions from goods and services that are produced outside Camden but imported for consumption[1]. Based on this equation and the diagram, it is apparent that there will be overlap in production and consumption-based emissions (from good/services both produced and consumed within the boundary). Note also that the sources of emissions (such as fuel combustion, land use change, and more) are the same- it is the end user, or location of such activities, which impacts their inclusion or exclusion.

For the above reason, the two emissions inventories cannot be summed together. The overlap means that a holistic approach to addressing Camden's overall emissions can be taken, and policies shouldn't necessarily focus on production or consumption emissions exclusively. Similarly, because policies rarely focus on addressing emissions from a single approach, our policy review highlights policies which will impact both production and consumption-based emissions for the relevant sectors.

Production-based approaches are more commonly reported as it more challenging to estimate consumption emissions. This is due to limited data availability and there being no official reporting mechanisms for consumption-based emissions at the local level within the UK.

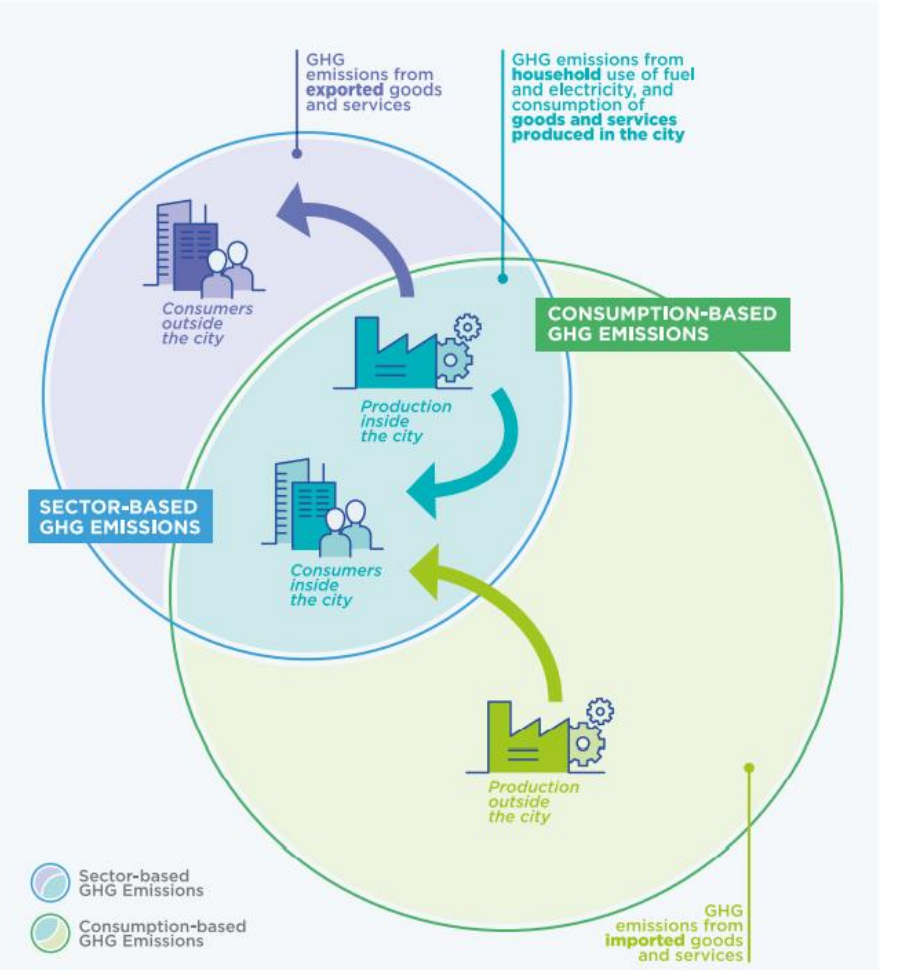


Figure 1.1: Visualisation of a consumption-based approach to an emissions inventory, compared to a production (sector based) approach. Source: C40 Cities, 2018. *Consumption-Based GHG Emissions of C40 Cities* . Available at: C40

[1]Note that our approach to calculating consumption-based emissions (Chapter 2) does not follow the equation above but does account for each of the elements outlined.

1. INTRODUCTION AND CONTEXT
THE SIGNIFICANCE OF CONSUMPTION-BASED EMISSIONS

Why is it important to measure consumption-based emissions?

The impact of places often extends beyond their geographic boundary, so it is important to consider the emissions associated with goods and service consumed, whether they are produced in Camden or elsewhere. If consumption-based emissions are not considered, then the full impact of the borough of Camden on emissions is not accounted for and Camden's contribution to climate change may be underestimated.

This also helps to avoid a situation where emissions are 'leaked' elsewhere, giving the impression emissions are being reduced within the boundary when emissions associated with imports are actually increasing. As such, when used alongside traditional accounting methods, consumption-based emissions can provide a more complete picture of the environmental impact within a region, and its sphere of influence.

Analysis shows that UK's consumption emissions have been falling at a slower rate than its territorial emissions. As cities are hubs for economic growth and over 60% of the world's population will live in cities by 2050, it will be vital for cities to begin measuring and reporting on consumption emissions and implementing policies to ensure that sustainable practices and technologies are used in order to meet the demand whilst keeping in line with the Paris agreement goals.

"Focusing policy solely at national-level decarbonisation cannot end the UK's contribution to climate change.

To do this we must also consider the carbon footprint due to UK-based consumption in policy making"

A 2020 report by WWF found that almost half of the UK's footprint is not accounted for under the net-zero target. This is because the target is focused on production-based emissions and doesn't consider the emissions from imported products. This is particularly relevant given the increasing offshoring of production as the UK has been deindustrialising. This is further demonstrated by the fact that the proportion of the UK's overall footprint that is related to UK consumption has increased substantially.

The WWF argue that the current focus will not end the UK's contribution to climate change and that inclusion of consumption-based emissions supports a focus on **justice** and **equity** by providing an insight into global emission's contribution and responsibility.

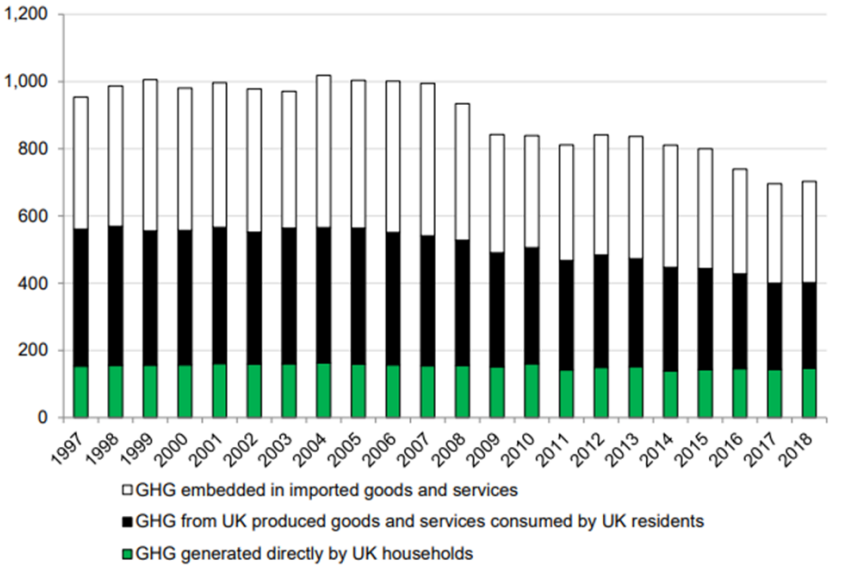
1. INTRODUCTION AND CONTEXT
UK'S CARBON FOOTPRINT 1997-2018

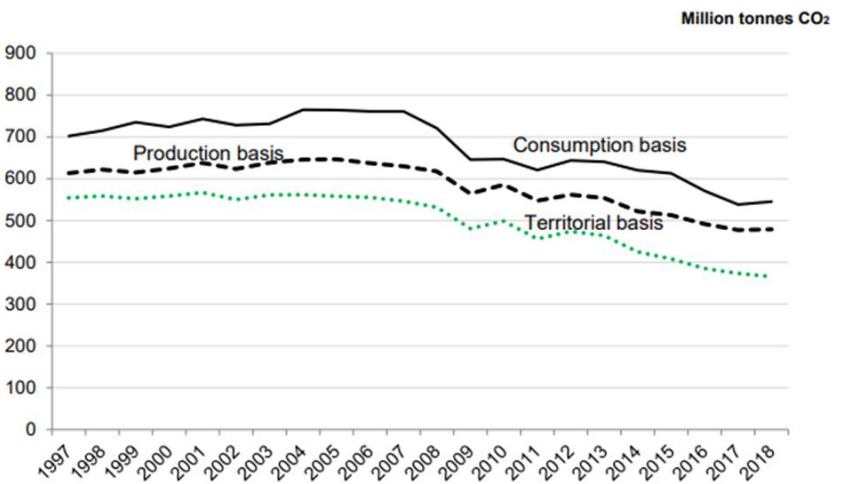
Despite the lack of a local reporting mechanism in the UK, the Department for Environment, Food & Rural Affairs (DEFRA) publish annual carbon dioxide emissions data, including national consumption emissions analysis. This was most recently released in 2018.

- The UK's Carbon Footprint peaked in 2004 with 1,018 $MtCO_2e$. There is a 31% decrease in the UK's calculated Carbon Footprint between 2004 and 2018.
- GHG emissions relating to imports (a significant source when taking a consumption-based approach) had dropped to 23% of 1997 levels by 2018.
- The emissions generated by households between 1997 and 2018 remains roughly constant at around 140 - 160 $MtCO_2e$.
- There was a 34% reduction in consumption-based emissions associated with UK produced goods and services from 1997-2018, as the economy has moved from manufacturing products in the UK to overseas.
- Emissions from consumption and production have both decreased 22% in this timeframe, in comparison with a 34% reduction of territorial emissions. This highlights the challenges faced in reducing consumption emissions and suggests that strong action is required from a number of different actors in order to manage consumption emissions.

UK Territorial emissions data is also available up to 2020, currently released provisionally by BEIS. This does not include consumption-based analysis, but does offer the first national level analysis of the impact of the COVID-19 pandemic on emissions.

Note on UK consumption-based emissions data: There are inherent complexities in quantifying consumption emissions, especially those that relate to imports to the UK produced overseas. DEFRA notes that these figures should be considered experimental only, and it expects to refine its methodology in future years.





Figures 1.2 & 1.3: Results of UK's Carbon Footprint 1997-2018, Department for Environment, Food and Rural Affairs

1. INTRODUCTION AND CONTEXT
CONSUMPTION-BASED EMISSIONS CASE STUDIES

Despite there being challenges in estimating consumption-based emissions, there have been some studies in specific cities to quantify this impact. Case studies for London and other C40 cities are outlined on this page.

Case Study: London's consumption emissions

The University of Leeds were commissioned by the Mayor of London in 2016 to assess the consumption emissions of the Greater London Authority.

- The consumption-based emissions for London in 2016 were estimated at approximately 110 $MtCO_2e$.
- The overall footprint of London declined by 4% between 2001 and 2016, with the majority of reduction occurring during the 2008 financial crisis.
- The largest 3 sources of emissions were food, housing and transport which amounted to 76% of household footprints.
- Analysis of the consumption-based emissions per capita were consistent with the average for the UK, except in the food & drink and Transport sector.

Case Study: Consumption-based emissions of C40 cities

The assessment of consumption-based GHG emissions of 79 cities, undertaken by the C40 Cities Climate Leadership Group, was based on the methodology detailed in the PAS 2070: Specification for the Assessment of Greenhouse Gas Emissions of a City. This study was carried out in partnership with the University of New South Wales, the University of Leeds and Arup.

- The results of the study concluded that in the majority of cities (80%) consumption-based GHG emissions were greater than sector-based GHG emissions, with average per capita consumption-based GHG emissions accounting for approximately 10.7 tCO_2e.
- The C40 report highlights the need for collaboration and shared learning, not only among supplier organisations but across cities.
- As cities are huge consumers of goods and services produced all over the world, their vast supply chains will have a huge impact on the emissions of the city itself, and vice versa.
- Cities are encouraged to use their powers to collaborate and share knowledge with each other in regard to engaging their supply chain organisations by developing partnerships with other cities of similar profiles or locations. This shared knowledge could extend to other levels of government to encourage standardisation of approaches.

02 Consumption Emissions Analysis

This chapter contains the outputs of our analysis of consumption-based emissions from the Camden area. Two methods have been applied, from which an average figure has been derived and taken to be the end result.

2. CONSUMPTION EMISSIONS ANALYSIS
OVERVIEW OF RESULTS & METHOD

The estimated consumption-based emissions for the Camden area totalled **2,523,662 tCO_2e.** This is 2.4 times more than the district's direct & indirect territorial based, 'in boundary' emissions alone (although a proportion of consumption emissions may be double counted here)[1].

Methodology

- Consumption-based emissions are the emissions produced in an area, plus emissions imported (in the form of good or services), minus emissions exported out of an area.
- A detailed assessment of consumption emissions in the district was beyond the scope of this study. However, two combined "top-down" estimation methods (economy and population-based approaches) were implemented. These methods showed a difference of 26% between them and the average was carried forward.
- The economic approach is valuable for businesses and offers insights specific to Camden. The household approach is less specific to Camden, but offers a more accurate consideration of individuals' footprints. Averaging these figures allows inclusion of both these approaches in the final estimate.

Economy Based (GVA) Approach (Pages 13-20):

- The Economy-based methodology utilised national datasets for UK consumption emissions over time as researched by Department for Environment, Food and Rural Affairs (DEFRA) and University of Leeds. This data has been split out by 17 Standard Industrial Classification (SIC) categories, which in turn are comprised of 106 activity types. Economic data for Gross Value Added (GVA), which is split across the same 17 SIC categories has been utilised to normalise national consumption emissions. GVA is defined as the value of goods or services produced in an area and the data is available both at a national and local authority-level[2].
- The methodology applied makes an assumption that economic activity and carbon consumption are closely related, enabling the national (UK) consumption-based emissions to be scaled down to a local authority by allocating emissions in the same ratio of the Camden local authority GVA (for each SIC sector) to UK GVA.

Population-based Approach (Page 21):

- The population-based methodology utilised national census data[3], alongside the data for UK consumption emissions over time as research by Department for Environment, Food and Rural Affairs (DEFRA) and University of Leeds. As above, this is split out by 17 SIC categories and combining these datasets enables UK consumption emissions to be normalised by the population of the Camden area.
- This part of the analysis is not indicative of the carbon impact of specific activities or trends that occur in Camden, as national census data has been used. For this reason, we focus our discussions on the results of our analysis on the outputs of the Economy Based approach.

Considering Household Emissions (Page 22): PAS 2070 defines consumption as expenditure on goods and services, and estimates GHG emissions based on economic final expenditure by households, and national, regional and/or local government, providing services to those households, and business capital investment. Final demand of most indirect consumption-based emissions in the UK lies with households. Further analysis on household expenditure could be undertaken to provide a more granular breakdown of these emissions- see Page 22.

1 - UK local authority and regional carbon dioxide emissions national statistics
2 - Office for National Statistics -UK local authority and regional estimates of carbon dioxide emissions (Page 31)
3 - Office for National Statistics- Estimates regional population

2. CONSUMPTION EMISSIONS ANALYSIS
ECONOMY BASED APPROACH - SUMMARY

Table 2.1 below shows consumption-based emissions over time for the Camden area, split by SIC category. These have been mapped from national datasets using economic output of Camden as a proportion of total UK.

Each SIC category relates to emissions released by an industry in order to meet consumer demand (represented by GVA) in the Camden area.

For example, construction emissions may not all occur directly within the Camden area. Emissions such as those associated with steel & cement production are likely to have occurred outside of the district boundary, but are still represented within the emissions factor (CO2e per unit of GVA) allocated to that category.

SIC Sectors	Emissions (ktCO2e)									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Agriculture, mining, electricity, gas, water and waste	3,114	2,131	2,040	2,007	956	817	879	883	687	690
Manufacturing	167	166	154	138	157	184	192	190	167	155
Construction	30	31	31	62	52	76	71	79	80	74
Wholesale and retail trade; repair of motor vehicles and motorcycles	20	20	19	18	18	26	25	25	28	29
Transport and storage	2,045	1,852	1,464	1,141	1,060	1,115	1,150	1,117	1,281	1,306
Accommodation and food services	63	72	69	76	79	86	78	81	81	84
Information and communication	63	57	61	57	51	49	54	56	58	55
Financial and insurance activities	3	3	3	6	8	7	17	31	37	42
Real estate activities	9	10	9	11	12	12	13	13	11	12
Professional, scientific and technical activities	86	84	86	97	100	107	120	123	119	122
Administrative and support service activities	23	24	26	41	44	48	39	34	42	34
Public administration and defence; compulsory social security	48	56	55	45	49	49	48	50	51	48
Education	53	56	50	54	58	58	62	60	61	68
Human health and social work activities	45	47	58	74	84	80	80	90	82	81
Arts, entertainment and recreation	16	15	16	17	16	18	18	22	21	21
Other service activities	13	13	13	14	15	14	27	39	36	29
Activities of households as employers; undifferentiated goods and services-producing activities of households for own use	0	0	0	0	0	0	0	0	0	0
Total	5,799	4,638	4,154	3,859	2,760	2,745	2,875	2,893	2,841	2,849

Table 2.1: Breakdown of Camden consumption emissions by SIC category, from Economy Based Approach

Highest emissions year for this sector

Lowest emissions year for this sector

2. CONSUMPTION EMISSIONS ANALYSIS
ECONOMY BASED APPROACH- SUMMARY

Figure 2.1 below shows consumption-based emissions over time calculated using the GVA approach, relative to district emissions calculated using a territorial approach. Note that some of the location-based emissions may also be included within the consumption-based emissions totals – they are not mutually exclusive and should not be summed together – for example, some goods may be produced and consumed within Camden Borough. This analysis shows that emissions decreased by 61% from a peak in 2007. This is likely the result of the economic recession alongside successful emission reductions initiatives.

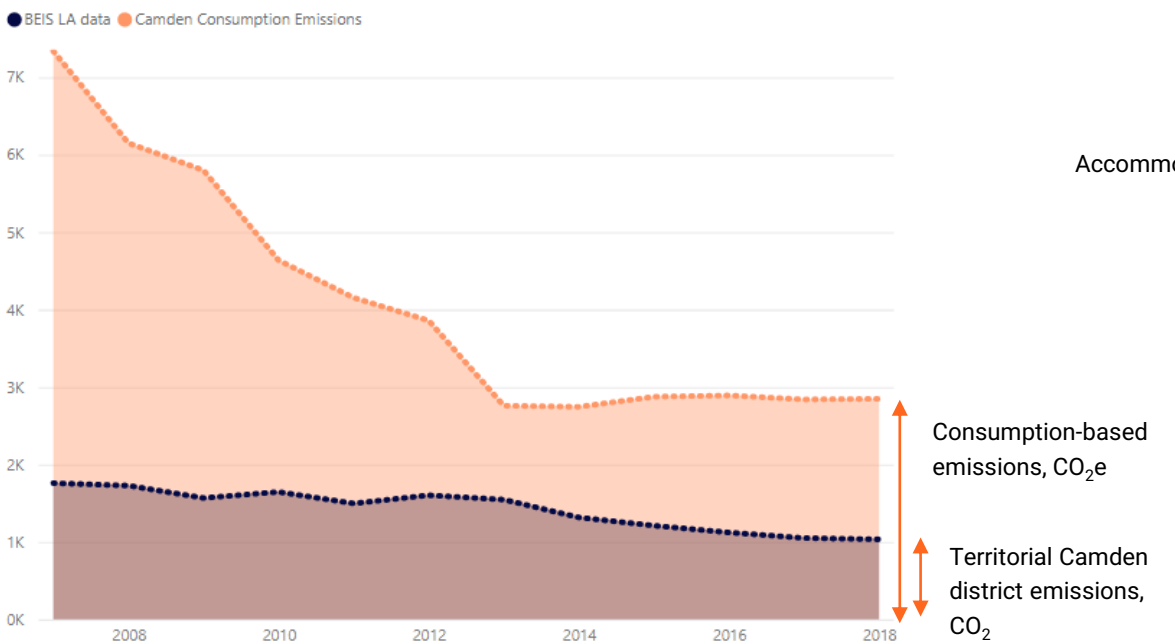


Figure 2.1: Camden's consumption emissions over time, compared to Territorial Emissions($ktCO_2e$)

The chart also demonstrates that a consumption emissions based accounting approach results in over double the emissions profile of a territorial emissions accounting approach (1.03 $MtCO_2e$ compared to 2.85 $MtCO_2e$).

Figure 2.2 provides a further breakdown of emissions by sector. The next pages will provide further information on each of the top 5 emissions sectors. In chapter 3 we provide analysis policies as they relate to the top sectors.

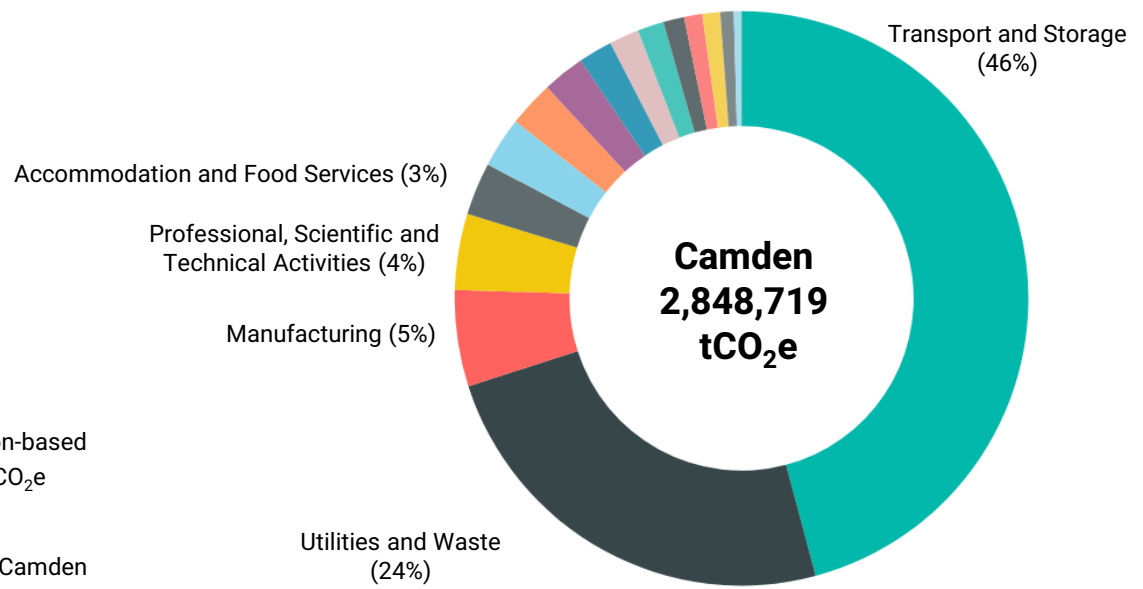


Figure 2.2: Breakdown of Camden's 2018 consumption emissions, by Standard Industrial Classification

2. CONSUMPTION EMISSIONS ANALYSIS
ECONOMY BASED APPROACH- TOP SECTORS

As outlined on pages 12 and 13, key sources of Consumption-based Emissions identified are categorised by Standard Industrial Classification (SIC) code[1]. An indication of activities which occur under each of the top 5 classifications is given detailed below. Naturally, these are focussed on economic activities in the borough. Understanding how businesses and residents can reduce these impacts is also of value, and high level examples of the types of activities which would contribute to emissions are given. Further context is provided later in this chapter and in the organisational research supplementary document.

Transport & Storage (46%) 	• Passenger or freight transport by rail, pipeline, road, water or air and associated activities such as terminal and parking facilities • Cargo handling and storage • Renting of transport equipment • Postal and courier activities *Example business impacts: Business travel, freight as part of supply chain. Example resident impacts: Driving, delivery of items bought online*
Utilities & Waste (24%) 	• Consumption of electricity, gas, steam and air conditioning supply • Water supply and treatment, sewerage • Waste collection, treatment and disposal activities; materials recovery *Example business impacts: Heating and water supply to offices and facilities, treatment of waste products, and any associated supply chain activity. Example resident impacts: Using home heating, treatment of sewage, collecting and treating waste*
Manufacturing (5%) 	Activities associated with production of: • Food products and beverages • Textiles and apparel • Electronics • Motor vehicles • Construction materials and metals *Example business impact: Energy consumed in manufacturing processes, directly, or in purchased components. Example resident impact: Buying electronic goods, buying clothes, buying food and drink*
Professional, Scientific and Technical Activities (4%) 	• Activities of professional services organisations such as legal services, accounting, architectural and engineering services, advertising, and market research • Activities in scientific research and development, and other professional, such as veterinary services *Businesses or residents purchasing services from any of the above sectors will contribute to emissions in this sector*
Accommodation and Food Services (3%) 	• Restaurants and mobile food service activities • Event catering and other food service activities • Beverage serving activities • Hotels and similar accommodation • Holiday and other short-stay accommodation *Businesses or residents using any hospitality services based in Camden, such as restaurants, will contribute to these impacts*

[1]Detailed in the UK Standard Industrial Classification (SIC) Hierarchy.

2. CONSUMPTION EMISSIONS ANALYSIS
ECONOMY BASED APPROACH- TRANSPORT AND STORAGE

Transport and storage related activities are the largest source of consumption-based emissions in Camden, contributing 46% of emissions, associated predominantly with passenger and freight transportation. Camden has one of the lowest road transport fuel consumption figures of all London boroughs[1]. Three times as much fuel consumption arises from from passenger transport compared to freight. Figure 2.3 shows transport related consumption emissions have been increasing since 2016. ONS statistics[2] are available breaking down the primary modes of commuter transport in Camden- naturally, this signals a high dependence on rail transportation (60%).

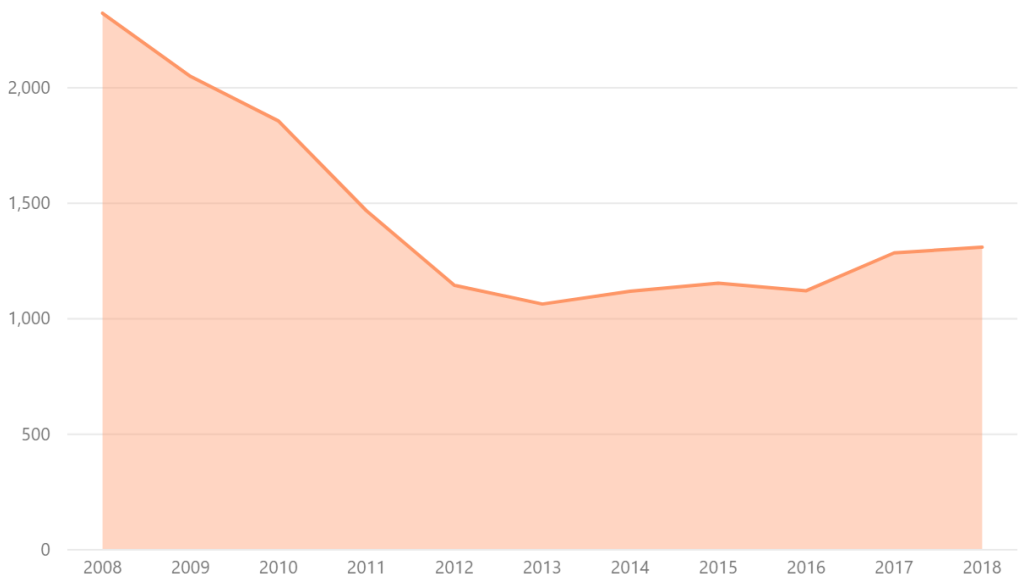


Figure 2.3: Camden Transport and Storage sector consumption emissions (ktCO2e)

This is fitting, given the predominance of Underground stations and rail terminals such as King's Cross and Euston stations. On-road travel impacts should also be considered. Camden's bus fuel consumption is the 10th highest compared to other London boroughs. Figure 2.4 compares the relative rates of fuel consumption between various modes of on-road transportation in Camden, signaling that this is dominated by private vehicles. The consumption analysis carried out by Leeds University found that London had higher than average emissions associated with air travel.

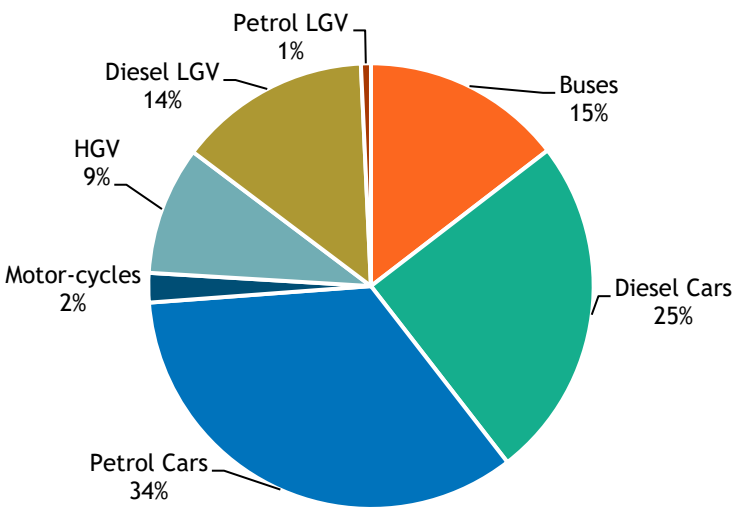


Figure 2.4: Breakdown of Camden's road transport fuel consumption by vehicle type, 2013. Fuel consumed for freight activities composes 29% of the total, the remaining 71% is attributable to personal transportation.[3]

1- Government Data on Road Transport Energy Consumption
2- Modes of commuter transport in Camden, ONS
3- Road Transport Energy Consumption, by London Borough

2. CONSUMPTION EMISSIONS ANALYSIS
ECONOMY BASED APPROACH - UTILITIES AND WASTE

The consumption of Electricity and Gas and the treatment of Water and Waste are the second largest group of consumption activities, representing 24%. This industrial classification covers a large range of activities - datasets are not available to split this out further into individual activities at a Local Authority level.

The decline in emissions seen in Figure 2.5 may be due to greening of grid electricity. Table 2.2 details waste management rates in Camden, indicating significantly lower recycling rates than the London and national averages. Table 2.3 offers an indication of mean domestic and non-domestic electricity consumption in Camden.

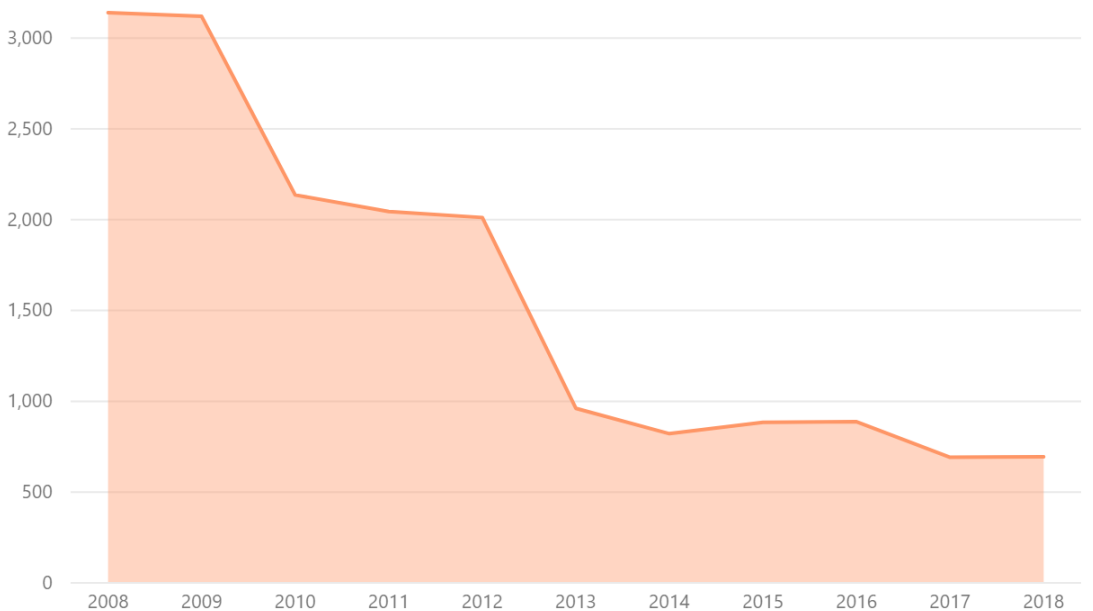


Figure 2.5: Camden utilities and waste consumption emissions (ktCO2e).

Area	Proportion of household waste recycled or composted (2019/20) [1]
Camden	26%
Average - London	34%
Average- England	44%

Table 2.2: Comparison of recycling rates in Camden against London and National Averages

Area	Mean Domestic Electricity Consumption- 2019 (KWh) [2]	Mean Non-Domestic Electricity Consumption- 2019 (KWh) [2]
Camden	3,192	51,521
Average - London	3,473	62,378
Average- England	3,611	65,088

Table 2.3: Comparison of mean electricity consumption rates per meter in Camden, against London and National Averages

1- Household Waste Recycling Rates - London
2- BEIS Sub-National Electricity Consumption data

2. CONSUMPTION EMISSIONS ANALYSIS
ECONOMY BASED APPROACH- MANUFACTURING

Of the remaining consumption emissions, manufacturing activities are the next largest source, contributing 5% to the footprint. In 2019, there were approximately 4,000 jobs in the manufacturing sector in Camden[1] which has declined by around 1,000 since 2009.[2] The decline of manufacturing is detailed by a local economic assessment from 2011[3]- the jewellery manufacturing industry centered around Hatton Garden, for example, has struggled in the face of increasing rent prices. Figure 2.7 provides a breakdown of consumption emissions from manufacturing processes across a range of product groups, for the whole of the UK. It has not been possible to provide a breakdown of specific manufacturing activities in Camden due to a lack of data.

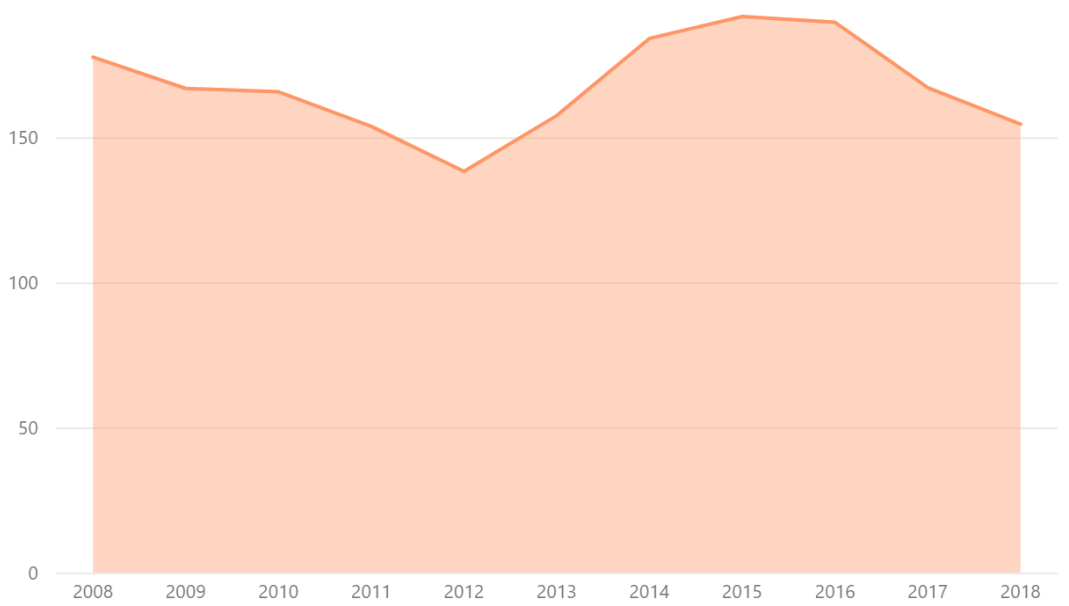


Figure 2.6: Camden Manufacturing consumption emissions (ktCO2e)

Industry	Products						
	Food	Clothes	Transport	Power, water & waste	Manufactured goods	Mining & construction	Services
Manufacturing	9,374	3,837	12,157	3,775	43,412	13,413	44,811

Figure 2.7: Analysis by Leeds University[4] showing UK consumption emissions from manufacturing activity, across different product categories. Data is from 2012.

1 - Nomis labour market profile for Camden
2- Camden Business and Employment Bulletin 2021
3 - Camden- Local Economic Assessment 2011
4- Leeds University- Breakdown by product and source industry

2. CONSUMPTION EMISSIONS ANALYSIS
ECONOMY BASED APPROACH- PROFESSIONAL, SCIENTIFIC & TECHNICAL ACTIVITIES

Professional services, scientific and technical activities make up 4% of Camden's consumption footprint. It is the largest sector by employment in Camden, providing 20% of jobs (~75,000)[1] . Figure 2.9 provides a breakdown of employment rates in London for occupations under this SIC code [2].

This shows that the most common job classifications within this sector are head office and management consultancy roles, and legal and accounting activities. We have reviewed a number of businesses operating in Camden and provide profiles in the Supplementary Document.

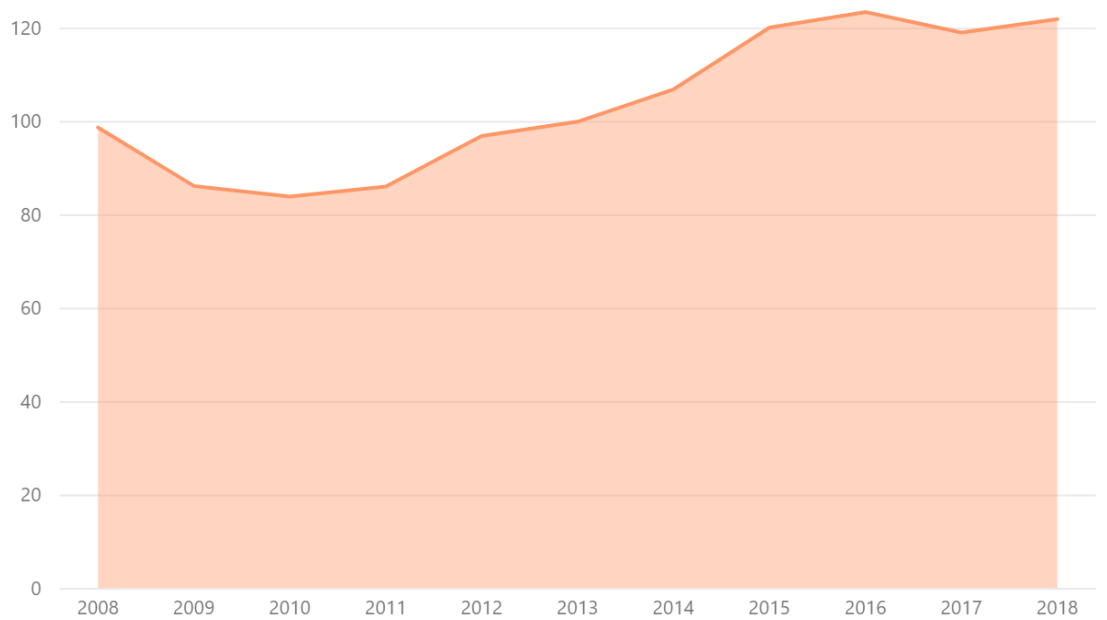


Figure 2.8: Camden Professional, Scientific and Technical Activities consumption emissions (ktCO2e)

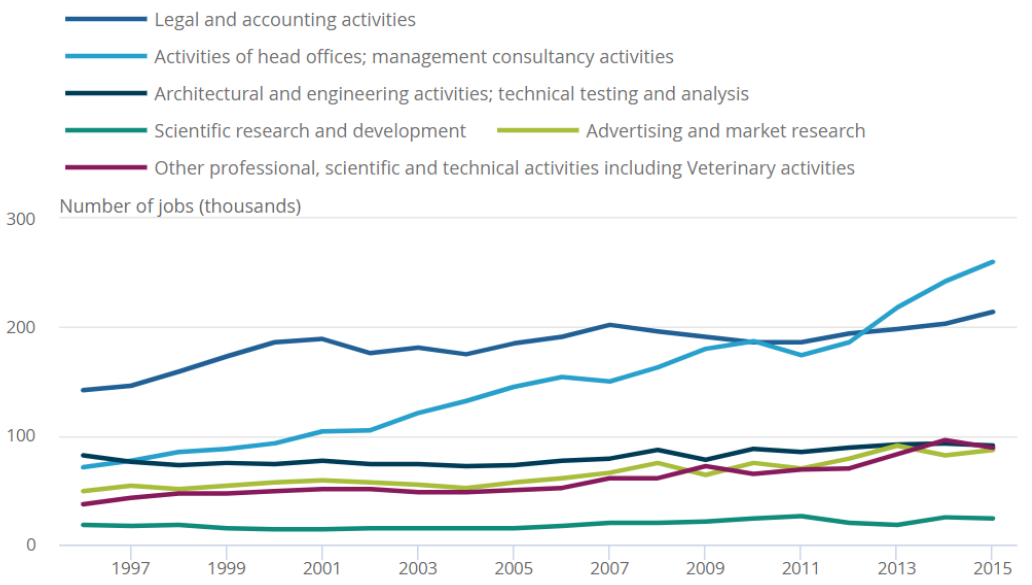


Figure 2.9: Jobs in London by Professional, Scientific and Technical divisions, 1996 to 2015

1- Camden Business and Employment Bulletin 2021
2 Office for National Statistics

2. CONSUMPTION EMISSIONS ANALYSIS
ECONOMY BASED APPROACH- ACCOMMODATION & FOOD SERVICES

The fifth largest category is Accommodation and Food Services which account for 3% of consumption emissions. Analysis carried out by Leeds University[1] found different consumption patterns for London residents versus the rest of the UK, with higher emissions for food and drink consumed outside the home, but lower for in the home.

Food production and consumption is expected to change (Figure 2.11), with increased consumption of plant-based foods, and reduced consumption of animal products necessary in line with scientific targets for planetary health. However, modelling currently projects increases in production of the latter under a business-as-usual scenario[2].

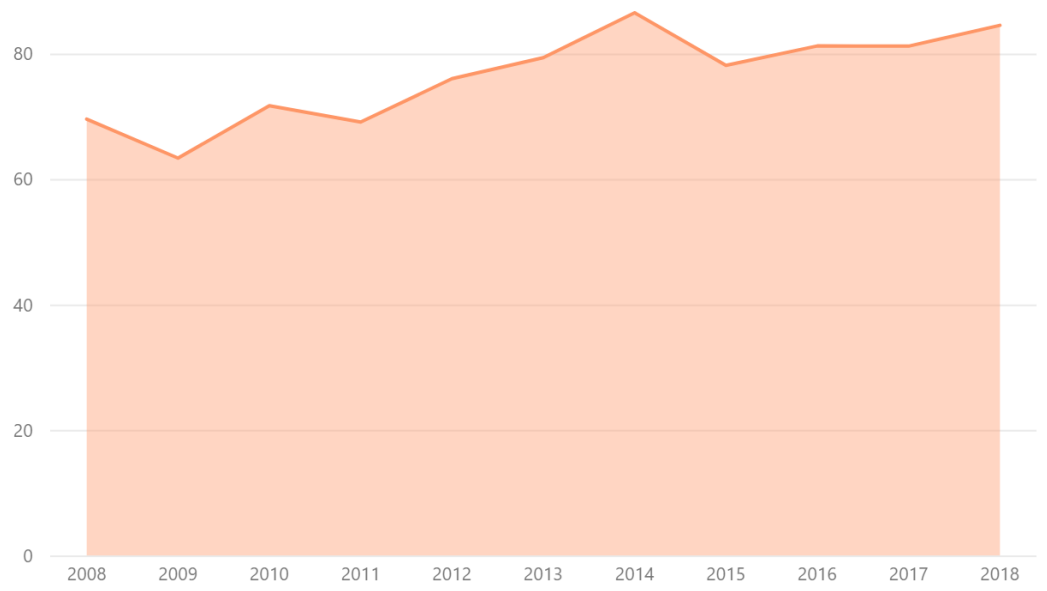


Figure 2.10: Camden Accommodation and Food Services consumption emissions (ktCO2e)

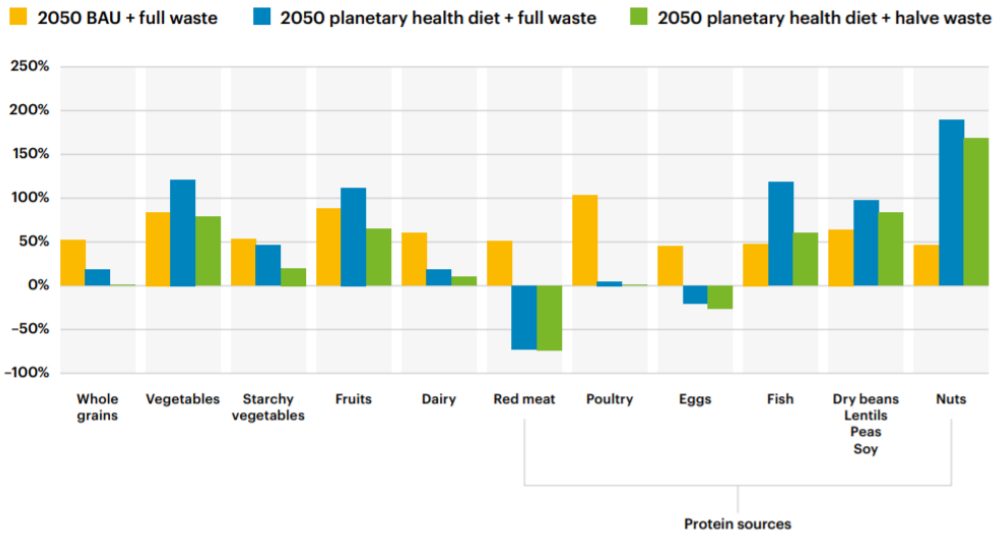


Figure 2.11: Predicted change in food production from 2010 to 2050 (percent from 2010 scenario) for a Business as Usual scenario, compared to changes required under two scenarios for planetary health.

1- Leeds University
2- EAT Lancet Commission Summary Report

2. CONSUMPTION EMISSIONS ANALYSIS
POPULATION-BASED APPROACH- SUMMARY

Table 2.4 below shows consumption-based emissions over time for the Camden area, split by SIC category. These have been scaled down from national consumption-based datasets using national census data. As in the outputs from the Economy Based approach, each SIC category relates to emissions released by an industry in order to meet consumer demand (represented by GVA) in the Camden area.

As the national data has been scaled down-based on population data only (as opposed to economic data per SIC category), the individual emissions of the SIC categories cannot be taken to be specific to Camden. However, the total emissions figure (**2,198.6 ktCO2e**) can be compared to the outputs of the Economic approach, and the average of these two figures was used to produce a final figure for Camden's consumption emissions (Page 12).

SIC Sectors	Emissions (ktCO2e)									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Agriculture, mining, electricity, gas, water and waste	1,489.7	1,478.8	1,467.7	1,565.0	1,577.9	1,521.1	1,481.5	1,308.7	1,210.1	1,240.1
Manufacturing	431.0	412.6	426.6	428.4	437.7	465.5	481.5	445.9	413.0	429.0
Construction	39.8	39.9	38.4	41.1	39.3	41.7	46.5	48.4	50.3	51.6
Wholesale and retail trade; repair of motor vehicles and motorcycles	11.5	11.6	10.9	11.4	11.4	11.6	12.1	12.5	12.5	12.8
Transport and storage	289.8	274.6	286.7	288.2	287.8	311.3	331.3	330.4	325.0	352.1
Accommodation and food services	14.3	15.6	14.5	15.8	16.1	15.3	16.4	16.7	17.0	18.0
Information and communication	4.9	4.5	4.8	5.0	4.7	4.8	4.8	4.7	4.7	4.9
Financial and insurance activities	4.1	3.6	3.9	4.2	4.3	4.5	4.5	4.3	5.0	5.2
Real estate activities	3.4	3.6	3.5	3.9	4.1	3.9	4.2	4.3	4.3	4.6
Professional, scientific and technical activities	7.2	7.0	6.9	7.4	7.4	7.9	8.4	8.3	8.5	8.6
Administrative and support service activities	8.6	8.6	8.6	9.0	9.1	10.0	10.6	10.9	11.3	11.6
Public administration and defence; compulsory social security	23.4	23.4	21.6	21.9	20.5	18.8	18.1	17.9	18.2	19.1
Education	10.6	11.4	9.8	11.0	11.0	9.9	10.7	10.6	10.6	11.2
Human health and social work activities	17.7	18.8	17.8	20.0	22.3	20.6	21.1	22.2	21.0	22.1
Arts, entertainment and recreation	3.4	3.2	3.1	3.3	3.4	3.2	3.5	3.6	3.5	3.6
Other service activities	3.4	3.4	3.2	3.5	3.6	3.4	3.7	3.8	3.8	3.9
Activities of households as employers; undifferentiated goods and services-producing activities of households for own use	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	2,362.9	2,320.7	2,327.9	2,439.2	2,460.7	2,453.5	2,458.9	2,253.3	2,118.9	2,198.6

Table 2.4: Breakdown of Camden consumption emissions by SIC category, from Population-based Approach

Highest emissions year for this category

Lowest emissions year for this category

2. CONSUMPTION-BASED EMISSIONS
ANALYSIS BY SPEND CATEGORY (HOUSEHOLD EXPENDITURE)

Research suggests that the final demand of most indirect consumption-based emissions in the UK lies with households (78%)[1]. It is therefore important to consider the consumption of households when assessing emissions of the Camden Borough area, to provide an understanding of the main drivers of consumption of citizens.

By analysing household spend for London and then applying that across the number of households in the Camden area, it has been possible to employ an Environmentally Extended Input-Output (EEIO) model to translate this spend into GHG impact.

Total **household consumption emissions for Camden's residents were estimated to be 2,070,918 tCO2e**. This means that approximately **82% of consumption-based emissions in the borough are attributable to indirect household expenditure**, higher than the national average figure given above. A further breakdown of these categories and associated emissions can be found in Appendix 1.

The most significant categories in terms of GHG impact are Fuel/Power, Transport and Other Expenditure Items. In turn, enhanced policies in these areas have the biggest potential to reduce consumption-based emissions moving forward. Some examples of mechanisms for reducing these impacts are:

- Transport: Increasing public engagement and improving infrastructure on low emissions modes of transport
- Household energy use: Facilitating energy saving programs in collaboration with energy providers or charities

Other expenditure items include: mortgage interest payments, council tax, money transfers and credit, holiday spending, licences, fines and transfers etc.

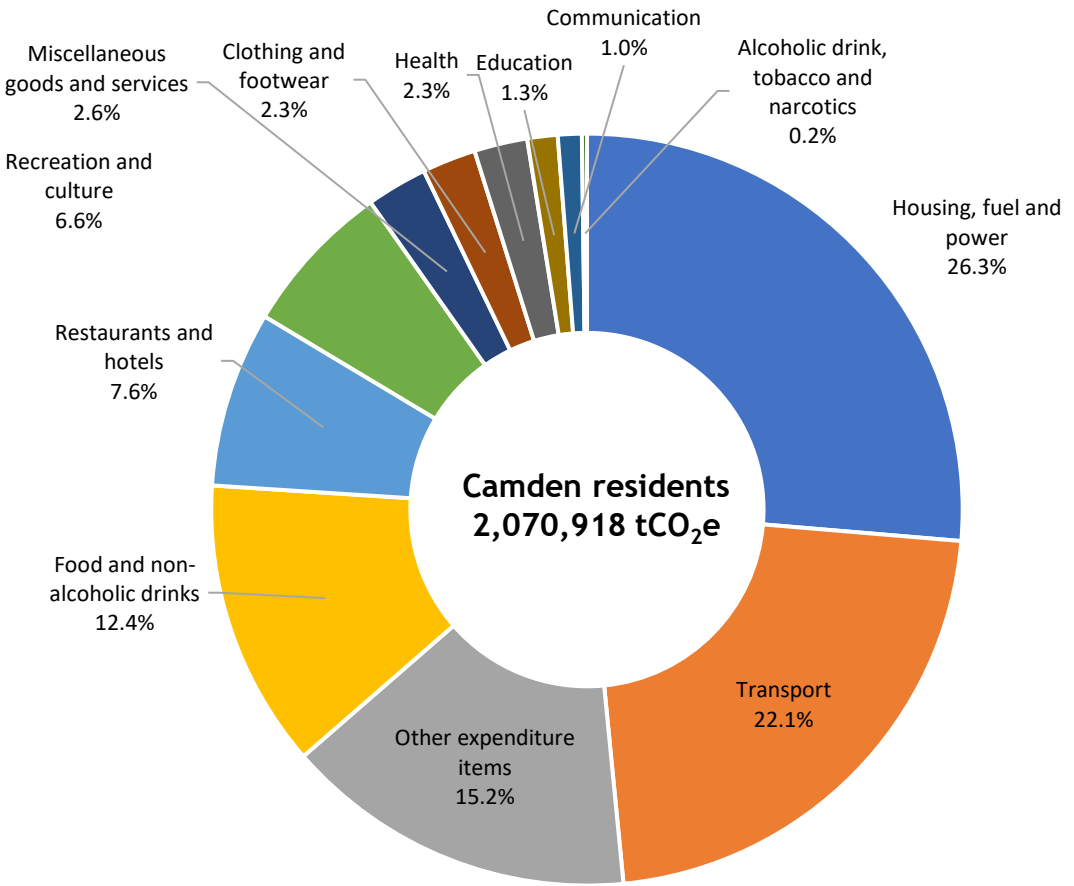


Figure 2.12: Camden resident's household consumption emissions

1- ONS Statistics on Household Consumption

03 Policy Impacts

This chapter sets out current policies to measure, report and limit and reduce consumption-based emissions associated with the top 5 categories of consumption-based emissions outlined in chapter 2. A focus is given to national policy, but regional and international examples are also given.

Our research revealed a relative lack of policy focussed specifically on consumption-based emissions. Our findings therefore focus on those policies we have judged most relevant consumption-based emissions. This could be:

- As part of a goal to reduce emissions accounted for in line with production-based emissions boundary (There is a large overlap between consumption and production-based emissions, as outlined in Chapter 1)
- Policies aimed at emissions sources judged to be particularly relevant to consumption-based emissions. For example, policies related reducing to freight impacts.

3. POLICY IMPACTS
TRANSPORT & STORAGE

Under the Renewable Transport Fuel Obligation, (RTFO) diesel and petrol suppliers have phased targets for biofuel use to be achieved by 2032 by volume of biofuels used. This policy will likely see increases in the use of biofuels in buses and other public transport. In the Road to Zero strategy, published in 2018, the UK Government reaffirmed that it will end the sale of new conventional petrol and diesel cars and vans by 2040.

As part of its 10-point plan for a green recovery, in 2020 the government announced a ban on the sale of new petrol and diesel cars and vans by 2030. Phase 2 of the plan will require all new cars and vans to be fully zero emissions in operation by 2035. The government has also provided grants for homeowners, business and local authorities to install EV charge points.

The Mayor's Transport Strategy (2018), sets out City Hall's "Healthy Streets" approach to reducing the impacts of transport in London, with the goal of 80% of trips in London being made on foot, bicycle, or using public transport by 2041. The plan will also see action to make it easier to own an electric vehicle in London, and sets out targets for installation of rapid EV charging points.

In 2020, the Mayor also committed to plans to power all the Underground network with renewable energy by 2030.

The Highways England Sustainable Development Strategy defines how the organisation aims to help achieve the Government's Road Investment Strategy, while also meeting environmental obligations. This includes reducing the impacts of new infrastructure developments by responsibly sourcing raw materials and moving towards a "circular" approach to management of resources.

Relating to Camden's canals, The Clean Maritime Plan sets out the vision for a transition away from fossil fuels across the sector, including vessels on inland waterways. A government announcement accompanying the launch states that "all new vessels for UK waters ordered from 2025 should be designed with zero-emission capable technologies" – which doesn't represent an outright ban on new diesels yet but suggests a move to hybrid or similar.

The Department for Transport's Freight Carbon Review (2017) sets out the impacts of various forms of freight and contains recommendations on improving efficiency. Although the use of waterborne methods of freight has declined, the report highlights this as an opportunity for more efficient, congestion free transportation of goods.

3. POLICY IMPACTS
UTILITIES & WASTE

The government continues to explore opportunities to reduce building energy consumption and to switch to greener energy supply methods. Under the Future Homes Standard the government is looking to make changes to Part L (conservation of fuel and power) and Part F (ventilation) of building regulations for domestic buildings and dwellings. This will include a future ban on gas boilers by 2025 (which may be brought forward to 2023 under the recent 10-Point Plan). Similarly, forthcoming updates to the Future Building Standard will seek to encourage impact reduction through retrofit in new-builds in non-domestic properties.

The Clean Growth Strategy set targets to upgrade as many houses as possible to EPC band C by 2035 (2030 for all fuel-poor households). The Government's preferred target is that non-domestic property owners in the private sector achieve EPC band B ratings by 2030. It is important any switch to electricity in the built environment is underpinned by national and local adoption of green electricity supply. In June 2021 the government bought forward its commitment to phase unabated[1] coal out of Britain's energy system by October 2024.

The Energy White Paper also outlines the latest plans on decarbonising the UK's energy system consistent with the 2050 net zero target.

On a smaller scale, the Renewable Heat Incentive and Smart Export Guarantee reward the use of community and domestic scale renewable energy technologies. The recently announced Green Heat Network Fund (GHNF) Transition Scheme will aim to provide capital grant funding for public and private sector low and zero carbon heat networks.

There are plans in London to drive the switch to renewable supply. As part of the Mayor of London's commitment to 100% renewable supply for the London underground by 2030, the mayor will also review opportunities to meet other public sector energy demand with renewables.

Our Waste, Our Resources: A Strategy for England (2018) sets out how the country will preserve resources by minimising waste, promoting resource efficiency and moving to a circular economy. Waste Prevention Programme for England aims to supporting a resource efficient economy, reducing the quantity and impact of waste produced whilst promoting sustainable economic growth.

In 2020 the government launched the Circular Economy Package. This is based on EU legislation intended to help drive a transition in businesses and consumers to a more circular economy- setting out steps to improve waste management and recycling rates.

1- Unabated coal power is the use of coal without any technology (such as Carbon Capture and Storage) to substantially reduce its CO2 emissions.

3. POLICY IMPACTS
MANUFACTURING

In November 2019, the UK government launched a £315m scheme to offer funds to energy-intensive firms, such as manufacturers over the next five years to invest in new energy reduction technologies. This fund, called the Industrial Energy Transformation Fund will launch next year and could be a key catalyst to drive lower energy consumption in the manufacturing industry.

The Circular Economy Package (Page 25) has been linked to UK's Industrial Strategy. The strategy seeks to encourage consideration of products' impacts at the design stage, and ways of encouraging consumers to consider the "whole life" value of a product, rather than just the up-front cost. This could have implications for manufacturers, with a potential switch in consumer preferences towards higher quality, longer lasting products.

The Build Back Better plan sets out the government's strategy for economic growth in the aftermath of the COVID-19 pandemic. This includes a focus on clean growth and maximising the advantages for UK industry.

The ten-point plan for a green industrial revolution also sets the agenda for action across several sectors, including green finance and innovation for businesses. Accompanying the government's commitment to end the sale of new petrol and diesel cars and vans (see Page 24) will be a £2.8 Billion support package to drive manufacture and uptake of electric vehicles. This is intended to help secure investment in factories and other strategic infrastructure to boost the UK's electric vehicle supply chain.

The Clean Growth Strategy includes improving business and industry efficiency. Alongside the strategy, BEIS published joint industrial decarbonisation and energy efficiency action plans with seven of the most energy intensive industrial sectors.

The Climate Change Committee also sets out policy recommendations for the manufacturing sector. These are intended to drive the changes necessary to achieve the carbon reductions outlined in the budget, and include recommendations on funding, skills availability, and development of low carbon infrastructure for manufacturers.

3. POLICY IMPACTS
PROFESSIONAL, SCIENTIFIC & TECHNICAL ACTIVITIES

Our research on policy impact for this category has focused on potential impact of policy on corporate consumption across the market activities listed above.

2018 Government Regulations on energy and carbon reporting for companies and limited liability partnerships outline the government's policy on Streamlined Energy and Carbon Reporting (SECR). SECR requirements apply to quoted, and large unquoted, companies that have consumed more than 40,000kWh of energy within the defined reporting period. SECR replaces the Carbon Reduction Commitment Scheme that ended in 2019 and is intended to reduce the administrative burden on companies by allowing more flexibility in how they report.

SECR reporting is typically included in the companies' directors report, and covers electricity and gas consumption, along with GHG emissions figures for the year. Although reporting uses a production-based methodology, it still encourages more businesses to scrutinise their energy consumption and incentivises performance improvements. Relating to consumption-based emissions, this could include investments in reducing consumption emissions both inside and outside the borough boundary. For example:

- Building energy consumption
- Impact of goods procured as part of supply chains
- Business travel and freight impacts

Mandatory reporting for SECR also paves the way for forthcoming requirements on businesses to disclose their climate-related financial information. By 2025 businesses will be required to report in line with the Taskforce on Climate Related Financial Disclosure's (TCFD) guidelines. These outline an organisation's climate related risks and opportunities, and their associated governance structures, and are intended to incentivise performance improvement.

Reporting in this way will mainstream consideration of climate risk in business, and provides investors and consumers with the information needed to drive investment in more climate forward businesses, with the intention of improving market resilience for all.

3. POLICY IMPACTS
ACCOMMODATION & FOOD SERVICES

At present there is no sustainability policy focussed specifically on the hospitality sector. Nevertheless, many of the businesses operating in the sector will be impacted heavily by the requirements outlined in this report, particularly those around waste, and corporate reporting.

Food and drinks is among seven energy intense sectors for which BEIS published its joint industrial decarbonisation and energy efficiency action plans. The plan outlines 6 actions to decarbonise the food and drink sector, including addressing energy supply (increasing the use of renewables, bio-energy and heat recovery), support in funding, and driving R&D and uptake of new low carbon technologies.

There are also several voluntary initiatives relevant to the sector. WRAP (Waste and Resources Action Plan), a government funded not-for-profit, have established the Cortauld Commitment 2025. This is a voluntary initiative whereby signatories commit to reducing the carbon and waste associated with their food and drink production by at least one fifth, in 10 years. The initiative works with retailers, manufacturers, hospitality, and farmers, and involves annual reporting of GHG emissions, food waste and water stress impacts.

In a bid to reduce emissions related to food consumption in 2019, 14 cities including London, signed up to the 'Planetary Health Diet' pledge. The EAT-Lancet Commission on Food, Planet, Health's report outlines a goal to achieve planetary health diets for nearly 10 billion people by 2050 by setting scientific targets for healthy diets and sustainable food production.

The Sustainable Hospitality Alliance is an organisation which makes up 25% of the global hotel industry with the goal of promoting more a sustainable hospitality industry. Action areas include climate change- members are encouraged to set Science-Based-Targets, and to look to reduce the impacts of their supply chains.

04 Conclusions & Recommendations

This chapter contains recommended next steps, based on the findings presented.

4. CONCLUSIONS AND RECOMMENDATIONS
TACKLING CONSUMPTION-BASED EMISSIONS

Analysis of Camden's consumption-based emissions has resulted in a calculation of **2,523,662 tCO2e** for the borough, more than 2.4 times the emissions attributed to the borough based on a territorial approach. 82.1% of Camden's consumption-based emissions are attributable to household expenditure, which is higher than the national average (See Figure 5.1 on page 32).

Tackling Consumption-based Emissions
In Camden Council's Climate Action Plan, the Council committed to assessing the borough's consumption-based emissions, and reviewing the key areas where the Council can help to influence these emissions. This report provides insight into the top emitting categories, their key emissions sources, and additional analysis of relevant policy and organisations. The council must now consider steps it could take in tackling these emissions sources.

Below, we provide an outline of key elements for consideration when taking action. Given their higher impact, the council may wish to focus efforts on the top two categories (below). Other categories (overleaf), should also be considered to ensure a fuller overlap with the council's existing climate action plan, and breath of impact, particularly in opportunities to engage with businesses. These outputs are not intended to be an exhaustive list of actions, but rather seek to highlight key considerations for the council as it plans next steps.

	Challenges	Recommendations
Transport (46%)	• The predominance of rail transport (Camden contains several mainline rail terminus) means a large proportion of Transport emissions are harder for the council to directly influence. Engaging with rail operators is essential • Air transport impacts may be disproportionately high in Camden due to high concentration of commercial activities	• Road transport impacts are dominated by private vehicles - the council should focus on engaging residents around behaviour change and use of public transport • Engage with residents and visitors to continue to use lower carbon travel options following rise in active travel during the COVID-19 present an opportunity for change • Encourage more local purchases of goods and services to reduce freight transport related emissions, considering the supply chain of purchases • Explore options to localise purchasing within the councils procurement guidelines and encourage local businesses to do the same
Utilities & Waste (24%)	• Further analysis is required to calculate the exact proportion of emissions associated with utilities and waste • Utility suppliers are largely based outside of Camden and will be harder to influence	• Emissions have already dropped significantly in the last decade, possibly due to greening of grid electricity • The council is encouraged to focus action on resident and business consumption habits, which it is most able to influence. Any action will be bolstered energy efficiency policies • Recycling rates are low in Camden, presenting an opportunity to tackle waste emissions

4. CONCLUSIONS AND RECOMMENDATIONS
TACKLING CONSUMPTION-BASED EMISSIONS

	Challenges	Recommendations
Manufacturing (5%)	• A decline in large scale manufacturing activities, and a lack of data on specific manufacturing in the area, means targeting action may be challenging. • Many national strategies aimed at greening industrial processes are focussed on very energy intensive industrial processes of which there are likely to be less in Camden, however business and residents purchasing goods requiring energy intensive manufacturing can be encouraged to consider lower embodied energy alternatives	• The manufacturing sector in Camden is concentrated in a few small clusters. The council could explore directly engaging such businesses through the Camden Climate Change Alliance • The government's commitments on growth after COVID-19, such as the Build Back Better plan, will aim to support clean growth and should be considered Note: Further decline of the manufacturing sector in Camden could present emissions savings, although this benefit may be offset by economic challenges.
Professional (4%)	• Many professional organisations operating out of Camden have the majority of their operations outside the area, and may have their own climate strategies. This makes it more challenging for either the council or local employees to influence their activities	• The Camden Climate Pledge should be used as a basis for business engagement focussed specifically on Consumption-based emissions • Government regulations require large businesses operating in the area to report on their energy and carbon, with the intention of incentivising performance improvement. The council can also use this data to target higher emitting organisations in the area • Action in this area may overlap with action to address Utility & Waste impacts, and synergies should be explored
Accommodation & Food (3%)	• Compared to other sectors, there is relatively little policy aimed at decarbonisation of this sector	• Food consumption outside the home in Camden is higher than the national average. The high concentration of hospitality services provides a clear priority action area for the council • Consumption-based accounting excludes activities associated with non-residents. As residents are less likely to use accommodation services, action to tackle emissions in this sector may be better focussed on food.

4. CONCLUSIONS & RECOMMENDATIONS
NEXT STEPS

This report has emphasised the benefits of taking a consumption based approach to emissions accounting, and the extent of consumption based emissions arising in Camden. In seeking to take serious climate action, the council, residents, and businesses now have a responsibility to look beyond addressing only territorial or production based emissions. The Council should consider the following next steps to embed the findings from this report into wider conversations on emissions in Camden:

1. Communicate & engage

- Use existing business and community networks such the Camden Climate Change Alliance, to share knowledge and best practice examples of measuring and reducing consumption in the borough
- Provide guidance materials to various communication channels to help businesses and individuals understand the impact of consumption activities in the borough on wider climate change and simple actions that can help reduce these

2. Monitor & report

- Ensure that Camden Council's sustainable procurement guidelines encourage suppliers to measure and manage their consumption emissions where feasible
- Lead by example, and estimate and publicly report on Camden Council's own consumption emissions. Encourage other local organisations to do the same.
- Consider conducting resident surveys to better understand local consumption patterns and provide recommendations to address these

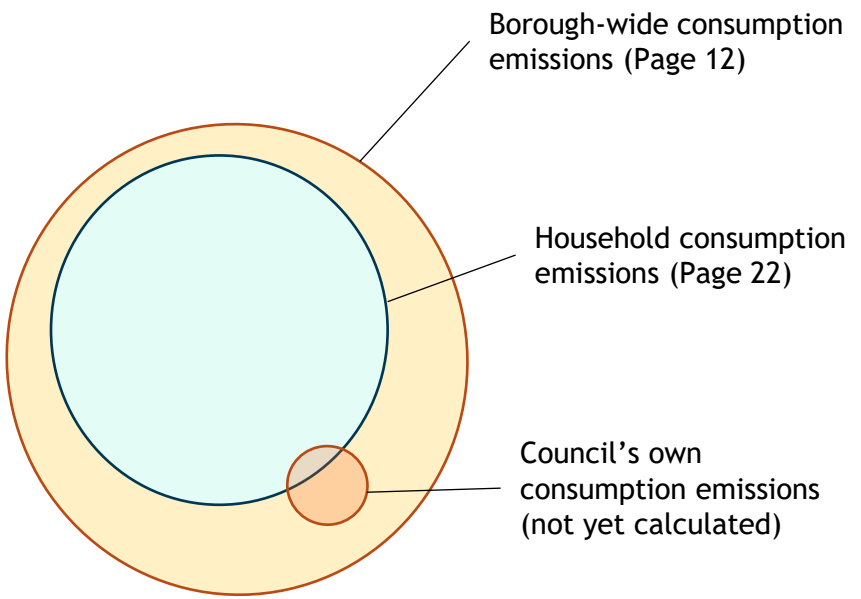


Figure 5.1: Illustration of differing sources of consumption-based emissions in Camden. Not to scale.

05 Appendix

APPENDIX 1
CITY-WIDE CONSUMPTION-BASED EMISSIONS; HOUSEHOLD BY SPEND CATEGORY

The following pages detail the emissions calculated for Camden in line with each commodity or service spend category, provided in the government data on household expenditure by region. These outputs form the basis of the household impacts results provided on Page 22.

Spend Category	Spend Sub Category	IO Emissions Factor ($kgCO_2e/£$)	Emissions (tCO_2e)
Housing, fuel and power	Electricity	5.896	382,546
Other expenditure items	Other expenditure items	0.541	313,975
Transport	Combined fares	9.496	280,548
Transport	Other travel and transport	0.895	88,615
Food and non-alcoholic drinks	Other meat and meat preparations	2.471	75,870
Housing, fuel and power	Net rent2	0.162	75,415
Restaurants and hotels	Restaurant and café meals	0.430	55,850
Food and non-alcoholic drinks	Poultry (fresh, chilled or frozen)	2.471	38,651
Health	Medicines, prescriptions, healthcare products and equipment	2.548	38,381
Recreation and culture	Package holidays - abroad	0.271	33,023
Education	Education fees	0.297	25,984
Transport	Rail and tube fares	0.505	25,178
Housing, fuel and power	Furniture and furnishings	0.183	24,641
Food and non-alcoholic drinks	Beef (fresh, chilled or frozen)	2.471	24,336
Restaurants and hotels	Alcoholic drinks (away from home)	0.430	24,185
Recreation and culture	Pets and pet food	1.246	23,826
Restaurants and hotels	Holiday abroad	0.425	23,160
Housing, fuel and power	Water supply and miscellaneous services relating to the dwelling	0.310	21,392
Transport	Repairs and servicing	0.561	19,163
Restaurants and hotels	Other take-away and snack food	0.430	17,702
Transport	Purchase of second hand cars or vans	0.260	15,834
Food and non-alcoholic drinks	Lamb (fresh, chilled or frozen)	2.471	15,747
Restaurants and hotels	Take away meals eaten at home	0.430	15,458
Recreation and culture	TV, video and computers	0.760	14,519
Clothing and footwear	Women's outer garments	0.278	14,498
Housing, fuel and power	Glassware, tableware and household utensils	1.239	14,356
Food and non-alcoholic drinks	Buns, cakes, biscuits etc.	0.676	14,101
Communication	Telephone and telefax services	0.174	14,047
Miscellaneous goods and services	Social protection	0.432	13,765
Transport	Purchase of new cars and vans	0.260	12,516
Restaurants and hotels	Holiday in the UK	0.425	11,827
Clothing and footwear	Footwear	0.311	11,176
Clothing and footwear	Men's outer garments	0.278	9,504

APPENDIX 1
CITY-WIDE CONSUMPTION-BASED EMISSIONS; HOUSEHOLD BY SPEND CATEGORY

Spend Category	Spend Sub Category	IO Emissions Factor ($kgCO_2e/£$)	Emissions (tCO_2e)
Recreation and culture	Sports admissions, subscriptions, leisure class fees and equipment hire	0.151	9,350
Housing, fuel and power	Household textiles	0.979	9,072
Recreation and culture	TV, video, satellite rental, cable subscriptions and TV licences	0.241	8,793
Food and non-alcoholic drinks	Pork (fresh, chilled or frozen)	2.471	8,589
Food and non-alcoholic drinks	Bacon and ham	2.471	8,589
Restaurants and hotels	Contract catering (food) and canteens	0.430	8,477
Miscellaneous goods and services	Vehicle insurance including boat insurance	0.143	8,132
Miscellaneous goods and services	Personal effects	0.335	7,950
Transport	Bus and coach fares	0.705	7,761
Miscellaneous goods and services	Hairdressing, beauty treatment	0.314	7,455
Food and non-alcoholic drinks	Other food products	0.458	7,431
Transport	Other motoring costs	0.491	6,822
Recreation and culture	Other major durables for recreation and culture	1.602	6,497
Health	Hospital services	0.297	6,370
Food and non-alcoholic drinks	Other milk products	0.454	6,046
Food and non-alcoholic drinks	Cheese and curd	0.454	5,520
Food and non-alcoholic drinks	Milk	0.454	5,520
Housing, fuel and power	Maintenance and repair of dwelling	0.099	5,359
Recreation and culture	Games, toys and hobbies	0.432	5,257
Food and non-alcoholic drinks	Pastry (savoury)	1.134	5,257
Food and non-alcoholic drinks	Bread, rice and cereals	0.154	5,076
Housing, fuel and power	Floor coverings	0.263	5,025
Recreation and culture	Audio equipment and accessories, CD players	0.760	4,840
Recreation and culture	Cinema, theatre and museums etc.	0.241	4,745
Food and non-alcoholic drinks	Chocolate	0.458	4,511
Recreation and culture	Computer software and games	1.502	4,351
Recreation and culture	Horticultural goods, garden equipment and plants	0.410	4,279
Miscellaneous goods and services	Household insurances - structural, contents and appliances	0.143	4,232
Miscellaneous goods and services	Toilet paper	0.831	3,852
Communication	Internet subscription fees	0.174	3,739
Miscellaneous goods and services	Hair products, cosmetics and electrical personal appliances	0.123	3,639
Clothing and footwear	Haberdashery, clothing materials and clothing hire	3.071	3,558
Food and non-alcoholic drinks	Fish and fish products	0.170	3,551

APPENDIX 1
CITY-WIDE CONSUMPTION-BASED EMISSIONS; HOUSEHOLD BY SPEND CATEGORY

Spend Category	Spend Sub Category	IO Emissions Factor ($kgCO_2e/£$)	Emissions (tCO_2e)
Housing, fuel and power	Household appliances	0.151	3,496
Recreation and culture	Gambling payments	0.351	3,254
Recreation and culture	Miscellaneous entertainments	0.423	2,940
Recreation and culture	Photographic, cine and optical equipment	0.948	2,747
Food and non-alcoholic drinks	Soft drinks (inc. fizzy and ready to drink fruit drinks)	0.261	2,726
Health	Spectacles, lenses, accessories and repairs	0.255	2,660
Recreation and culture	Equipment for sport, camping and open-air recreation	0.432	2,503
Miscellaneous goods and services	Medical insurance premiums	0.143	2,406
Food and non-alcoholic drinks	Eggs	0.454	2,366
Food and non-alcoholic drinks	Fresh vegetables	0.072	2,303
Clothing and footwear	Women's under garments	0.278	2,255
Food and non-alcoholic drinks	Cooking oils and fats	0.643	2,233
Miscellaneous goods and services	Toiletries and soap	0.123	2,069
Recreation and culture	Diaries, address books, cards etc.	0.186	2,051
Food and non-alcoholic drinks	Fresh fruit	0.072	2,010
Alcoholic drink, tobacco and narcotics	Wines, fortified wines (brought home)	0.080	1,903
Food and non-alcoholic drinks	Confectionery products	0.458	1,858
Food and non-alcoholic drinks	Edible ices and ice cream	0.458	1,858
Communication	Telephone and telefax equipment	0.283	1,802
Communication	Postal services	0.481	1,673
Food and non-alcoholic drinks	Coffee	0.397	1,612
Clothing and footwear	Girls' outer garments (5-15)	0.278	1,611
Housing, fuel and power	Tools and equipment for house and garden	0.116	1,609
Clothing and footwear	Infants' outer garments (under 5)	0.278	1,450
Food and non-alcoholic drinks	Fruit and vegetable juices (inc. fruit squash)	0.208	1,445
Recreation and culture	Package holidays - UK	0.271	1,415
Food and non-alcoholic drinks	Mineral or spring waters	0.397	1,381
Recreation and culture	Books	0.186	1,295
Clothing and footwear	Boys' outer garments (5-15)	0.278	1,289
Recreation and culture	Newspapers	0.186	1,187
Food and non-alcoholic drinks	Tea	0.397	1,151
Housing, fuel and power	Cleaning materials	0.083	1,105
Food and non-alcoholic drinks	Jams, marmalades	0.458	1,062

APPENDIX 1
CITY-WIDE CONSUMPTION-BASED EMISSIONS; HOUSEHOLD BY SPEND CATEGORY

Spend Category	Spend Sub Category	IO Emissions Factor ($kgCO_2e/£$)	Emissions (tCO_2e)
Food and non-alcoholic drinks	Sugar and sugar products	0.458	1,062
Food and non-alcoholic drinks	Butter	0.454	1,051
Food and non-alcoholic drinks	Margarine, other vegetable fats and peanut butter	0.454	1,051
Education	Payments for school trips, other ad-hoc expenditure	0.297	1,032
Alcoholic drink, tobacco and narcotics	Beer, lager, ciders and perry (brought home)	0.080	835
Alcoholic drink, tobacco and narcotics	Cigarettes	0.061	810
Clothing and footwear	Men's under garments	0.278	805
Transport	Purchase of motorcycles and other vehicles	0.197	799
Housing, fuel and power	Household goods and hardware	0.091	792
Food and non-alcoholic drinks	Other preserved or processed vegetables	0.072	754
Transport	Spares and accessories	0.111	705
Alcoholic drink, tobacco and narcotics	Spirits and liqueurs (brought home)	0.080	696
Clothing and footwear	Children's under garments (under 16)	0.278	644
Miscellaneous goods and services	Baby toiletries and accessories (disposable)	0.123	571
Clothing and footwear	Dry cleaners, laundry and dyeing	0.192	555
Food and non-alcoholic drinks	Other tubers and products of tuber vegetables	0.072	544
Housing, fuel and power	Domestic services, carpet cleaning and hire/repair of furniture/furnishings	0.031	544
Recreation and culture	Magazines and periodicals	0.186	540
Clothing and footwear	Accessories	0.126	509
Food and non-alcoholic drinks	Dried fruit and nuts	0.072	503
Food and non-alcoholic drinks	Pasta products	0.154	445
Food and non-alcoholic drinks	Potatoes	0.072	293
Food and non-alcoholic drinks	Other fresh, chilled or frozen fruits	0.072	251
Food and non-alcoholic drinks	Cocoa and powdered chocolate	0.397	230
Alcoholic drink, tobacco and narcotics	Cigars, other tobacco products and narcotics	0.061	211
Miscellaneous goods and services	Moving house	0.011	192
Food and non-alcoholic drinks	Dried vegetables	0.072	84
Food and non-alcoholic drinks	Preserved fruit and fruit based products	0.072	84
Miscellaneous goods and services	Non-package holiday, other travel insurance	0.143	83
Recreation and culture	Development of film, deposit for film development, passport photos, holiday and school photos	0.045	79
Miscellaneous goods and services	Bank, building society, post office, credit card charges	0.001	6
Alcoholic drink, tobacco and narcotics	Alcopops (brought home)	0.080	0
Restaurants and hotels	Room hire	0.425	0

Disclaimer

Anthesis (UK) Limited has prepared this report for the sole use of the client (Camden London Borough Council) and for the intended purposes as stated in the agreement between Anthesis and the client under which this report was completed. Anthesis has exercised due and customary care in preparing this report but has not, save as specifically stated, independently verified information provided by others. No other warranty, express or implied, is made in relation to the contents of this report. The use of this report, or reliance on its content, by unauthorised third parties without written permission from Anthesis shall be at their own risk, and Anthesis accepts no duty of care to such third parties. Any recommendations, opinions or findings stated in this report are based on facts and circumstances as they existed at the time the report was prepared. Any changes in such facts and circumstances may adversely affect the recommendations, opinions or findings contained in this report.