



centre for
sustainable
energy

Carbon footprint report

Bristol Disability Equality Forum

Centre for Sustainable Energy,
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1. Your footprint report

Welcome to your community's carbon footprint report!

This report looks at how carbon emissions¹ resulting from the different activities that a household engages in differ between Bristol households which have at least one Disabled person, compared with households which don't have a Disabled person. The accompanying method report tells you how the footprint was calculated and what the key data sources were.

It's a consumption-based footprint.

Because the footprint is based on households' consumption activities, we call it a 'consumption-based' footprint rather than a 'territorial' footprint. A territorial footprint captures all the emissions that are generated within a particular area, including from industry, agriculture and transport. Comparatively, a consumption-based footprint captures all emissions caused by residents of an area, regardless of where geographically they occur.

It's organised by theme.

The report is organised around the following key consumption 'activities':

¹ Whilst the report is called a *carbon* footprint, it is actually a footprint of carbon *and* other gases which impact the climate.

Housing: Emissions resulting from residents' use of energy in their homes.

Transport: Emissions resulting from the transport choices and behaviours of residents.

Food: Emissions resulting from the consumption of food and drink goods by residents.

Waste: Emissions resulting from the management of waste generated by residents.

Goods & services: Emissions resulting from the purchase of goods and the use of services by residents.

Goods – all household goods (not food), including homeware, toiletries, medicines, furnishings, electronic goods, appliances, and large items such as cars.

Services – use of services, including the maintenance and repair of home, vehicles and other equipment, banking and insurance, medical services, treatments, education costs, communications (e.g. TV, internet and phone contracts), and other fees and subscriptions.

Other – leisure, entertainment, sporting or social activities.

The importance of nature.

Nature is critical to our mental and physical well-being; but it also plays a critical role in Bristol reducing its emissions and becoming a climate resilient city. Your carbon footprint report has a section exploring this.

After the data come the human stories.

The report also includes 3 pen portraits of Disabled people living in Bristol, giving an insight into their daily living and how their 'consumption activities' (and in turn their carbon emissions) are shaped by being Disabled.

So, what next?

Having a picture of what your community carbon footprint looks like is a great starting point as it helps us understand the activities which result in carbon emissions. From here we can begin to think about the breadth of activities needed to reduce emissions, where to focus our attention, and explore which activities are possible at the community-level, and which require Bristol-wide, national, or even global commitment and action.

Collective action is necessary.

Whilst many of us can make changes to our daily living to reduce our carbon footprints – in small and big ways – working together at the community and even city-wide scale is where bigger change is possible. Our collective voice is also stronger when asking local and national government for the policy and regulatory changes

needed to enable us to reduce our emissions and improve our communities and quality of life.

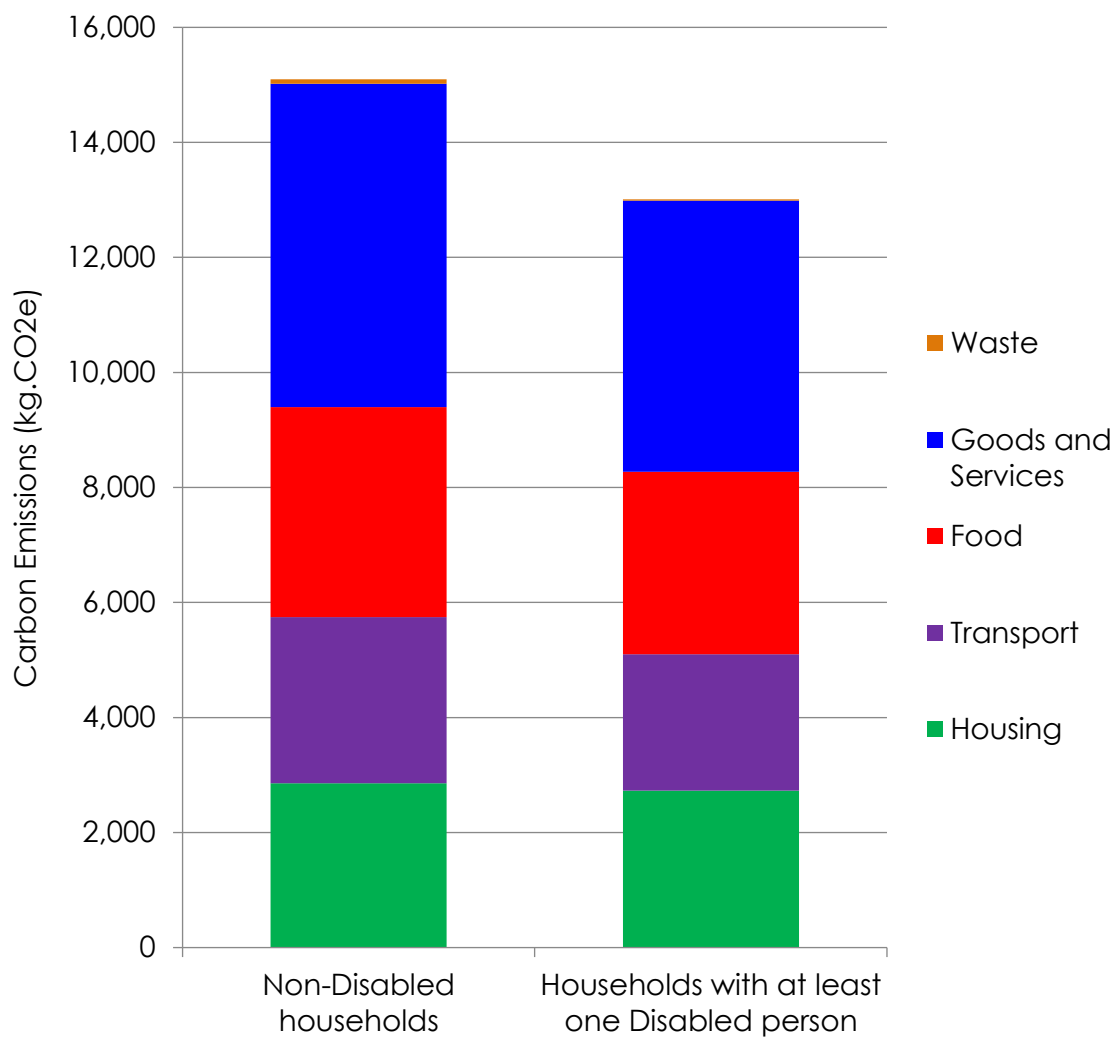
The Bristol context.

It is clear that in order to halt catastrophic climate change, we need to cut our emissions to zero; reducing them isn't sufficient. Recognising and stepping up to this challenge, Bristol has committed to reducing its carbon emissions to 'net zero', and becoming climate resilient, by 2030. Net zero emissions (also referred to as carbon neutral) means that any carbon dioxide that is emitted needs to be balanced by the same amount of carbon dioxide being absorbed from the atmosphere (e.g. by trees). Bristol's One City Climate Strategy outlines how this 2030 goal can be achieved, and is a 'call to action' to all the stakeholders across the city needed to make this a reality.

In each section of your carbon footprint report we've outlined the relevant headline objectives from the One City Climate Strategy, which outlines where the city needs to be by 2030 if it is to be the carbon neutral and climate resilient city that it has committed to be. In each section we have included examples of community initiatives that could help reduce your community's emissions and make a critical contribution towards the city's 2030 vision.

2. Overview: the carbon footprint of Bristol households which have at least one Disabled person

This figure shows how annual carbon emissions per household (measured in kg), resulting from the different activities that residents engage in, differ between Bristol households which have at least one Disabled person, compared with those which don't have a Disabled person ('non-Disabled households').



Total annual emissions (kg.CO_{2e})

	Sector	Non-Disabled households	Households with at least one Disabled person
Total	Housing	429,111,719	115,113,819
	Transport	433,709,129	100,154,624
	Food	548,222,073	133,911,741
	Goods & services	843,346,140	199,035,295
	Waste	11,690,167	3,025,079
	Total		2,266,079,228
Per household	Housing	2,859 (19%)	2,727 (21%)
	Transport	2,889 (19%)	2,373 (18%)
	Food	3,652 (24%)	3,173 (24%)
	Goods & Services	5,618 (37%)	4,715 (36%)
	Waste	78 (1%)	20 (1%)
	Total		15,097

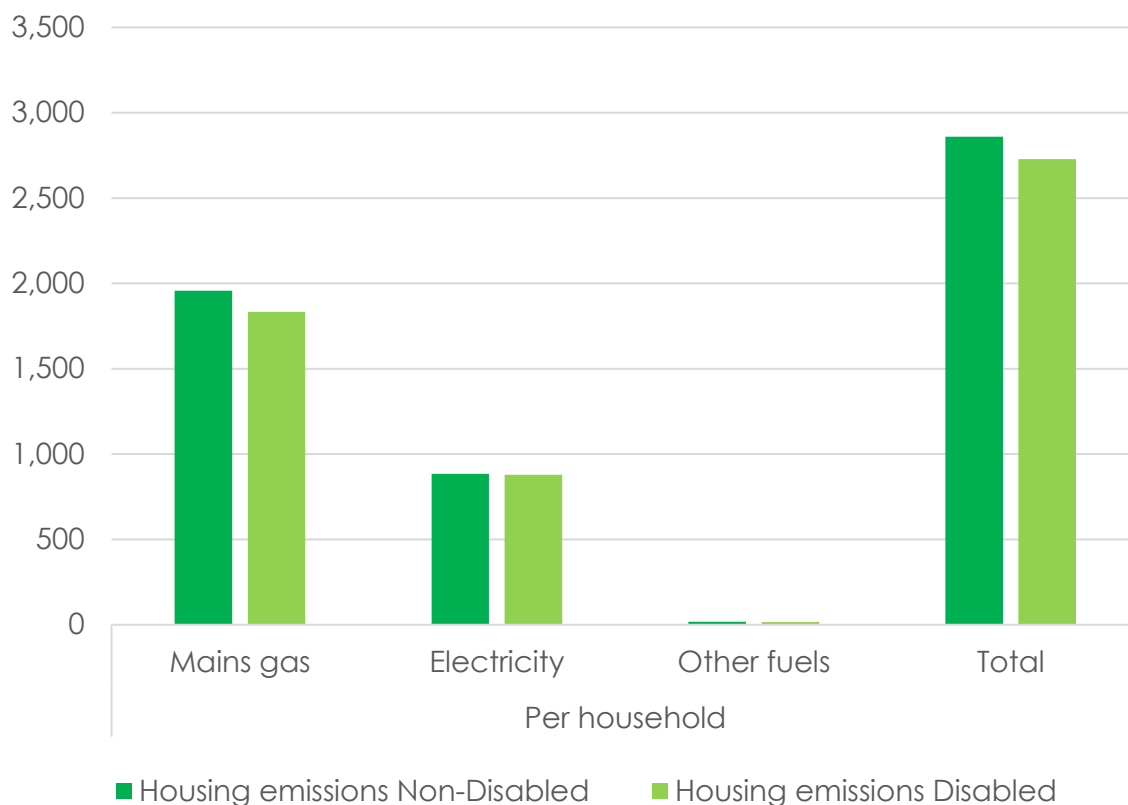
3. Housing

21% of the carbon emissions from households with at least one Disabled person are from the use of energy in the home – with energy being in the form of gas, electricity and ‘other fuels’ (the emissions split between these different energy sources is detailed below).

In the average UK home, 64% of this energy is being used to keep the home warm, 17% to heat water, 16% for lighting and appliances, and 3% for cooking². In some households where there is at least one Disabled person, there may be a need to keep the house warmer than average, and the household may have additional electrical aids which facilitate the daily living of the Disabled resident – such as hoists, electric wheelchairs and scooters, and electric beds – all of which will increase the demand for energy in those homes. Despite these additional energy requirements, as is shown in the table below, average annual housing emissions of households with at least one Disabled person are lower on average than non-Disabled households.

² Energy facts from: [Energy consumption in the UK, BEIS \(January 2021\)](#)

a. Annual housing emissions



Average annual housing emissions (kg.CO_{2e})

	Emissions type	Non-Disabled households	Households with at least one Disabled person
Total	Mains gas	293,680,098	77,393,591
	Electricity	132,667,389	37,065,556
	Other fuels	2,764,232	654,672
	Total	429,111,719	115,113,819
Per household	Mains gas	1,956 (68%)	1,834 (67%)
	Electricity	884 (31%)	878 (32%)
	Other fuels	18 (1%)	16 (1%)
	Total	2,859	2,727

b. Reducing housing emissions

Outlined below are the headline objectives from Bristol's One City Climate Strategy which are relevant to homes. They outline changes that are needed to the city's buildings by 2030 if Bristol is to be the carbon neutral and climate resilient city that it has committed to be.

Bristol's One City Climate Strategy: Objectives for buildings

1. New buildings are carbon neutral and climate resilient.
2. The energy performance of existing buildings is improved to minimise heat demand, whilst also preventing overheating.
3. Individual electric heat pumps are installed in ~95,000 buildings (which have been well insulated), and 65,000 buildings connected to heat networks, as part of the phase out of gas heating across Bristol.
4. Existing building stock is prepared and adapted for future climate hazards.
5. Renewable energy generation within the city will be maximised, including approximately 350MW of solar, and 'smart electricity' solutions will be widely adopted.
6. All new developments maximise tree and plant cover.

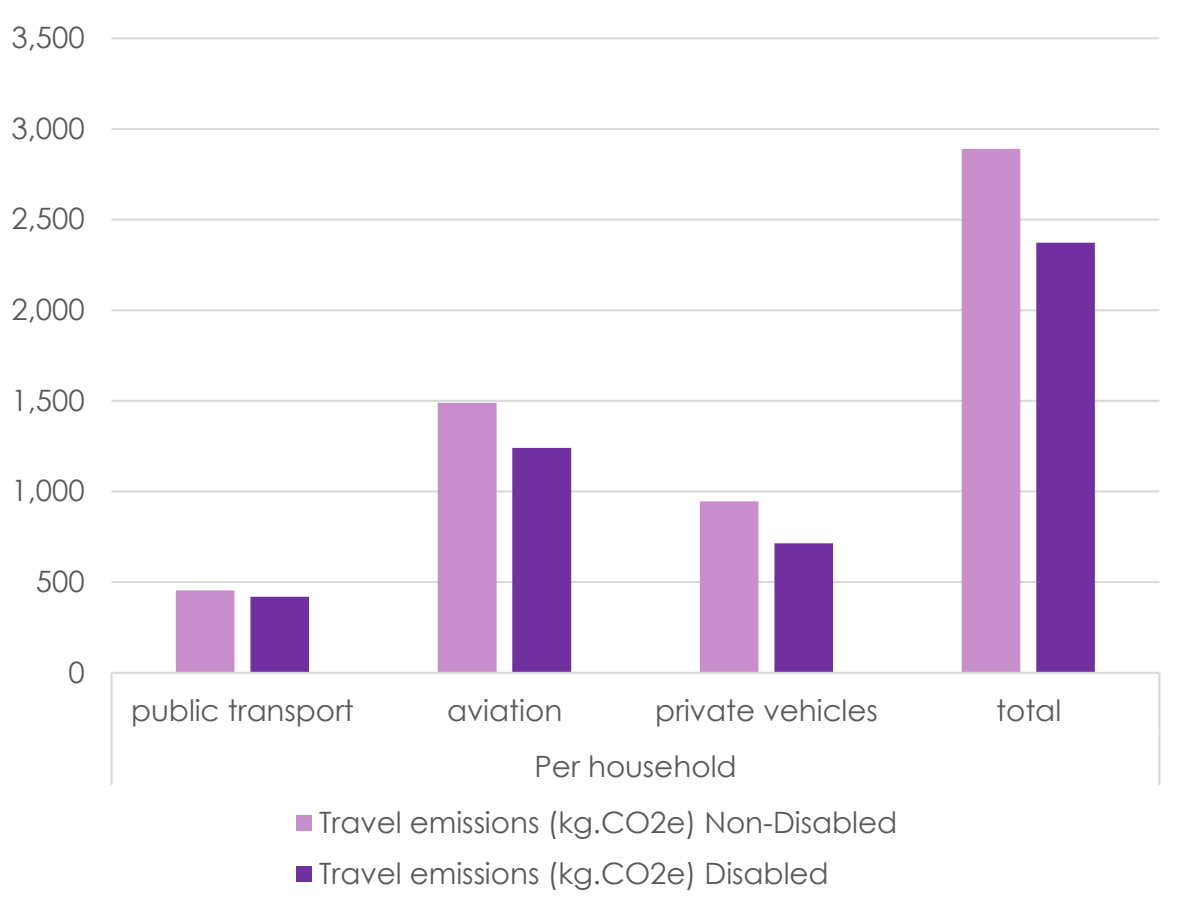
Here are some examples of community and Bristol-wide initiatives that could contribute to achieving these objectives, whilst simultaneously realising multiple co-benefits for the community:

1. Improve the energy efficiency of homes, community buildings & businesses (focussing on the least efficient), with low-cost through to high cost measures. Information on the EPC ratings of public and commercial buildings (which accompany these reports) can focus these activities. Access available funding for homes, such as ECO funding.
2. Energy audits of businesses and community buildings to understand opportunities for improving their energy performance and install renewable energy technologies.
3. Partnership project with social housing providers to futureproof social housing, including increasing energy efficiency, installing solar PV, and piloting the install of low carbon heating technologies.
4. Project to engage private landlords in improving the energy performance of their properties.
5. Green Open Homes events for householders to share experiences, ideas and learnings (existing resources and online platform: <http://www.greenopenhomes.net/>).
6. Solar PV installation on community, leisure and commercial buildings.
7. Bulk buy solar PV schemes for homes, like Frome's Solar Streets, to increase the affordability of domestic solar PV.
8. Workshops, events and regular advice sessions to increase energy literacy.
9. Community energy champion project.

4. Transport

18% of the carbon emissions from households with at least one Disabled person are from their transport use. Detailed below is further information on the split of emissions across different transport modes.

a. Annual transport emissions



Average annual travel emissions (kg.CO_{2e})

	Emissions type	Non-Disabled	Households with at least one Disabled person
Total	public transport	68,170,951	17,703,799
	aviation	223,715,201	52,325,458
	private vehicles	141,822,977	30,125,367
	total	433,709,129	100,154,624
Per household	public transport	454 (16%)	419 (18%)
	aviation	1,490 (51%)	1,240 (52%)
	private vehicles	945 (33%)	714 (30%)
	total	2,889	2,373

c. Reducing transport emissions

Outlined below are the headline objectives from Bristol's One City Climate Strategy which are relevant to transport. They outline changes that are needed to the city's transport activities and wider system by 2030 if Bristol is to be the carbon neutral and climate resilient city that it has committed to be.

Bristol's One City Climate Strategy: Objectives for transport

1. Significant reduction in car use, with an increase in public transport use, walking and cycling; aiming for a total 40% reduction in total vehicle miles.
2. All Bristol's cars are ultra-low emission vehicles (ULEVs), with 90% of other vehicles being ULEVs.
3. Reduce emissions from all air travel.
4. Significant improvements made to accessibility, service & climate resilience of sustainable travel infrastructure.
5. All electricity supplied to and generated in Bristol will be carbon neutral (this will include ~ 350MW of solar installed within the city), and 'smart electricity' solutions will be widely adopted (decarbonisation of electricity is relevant for the increase in ULEVs, many of which will be electric).
6. Everyone lives and works within a 10 minute walk of a quality green space with good tree canopy cover.
7. Bristol's natural environment has been restored, preserved and enhanced to maximise climate resilience, and health and wellbeing.

Below are some examples of community and Bristol-wide initiatives that could contribute to achieving these transport objectives, whilst simultaneously realising multiple co-benefits for the community.

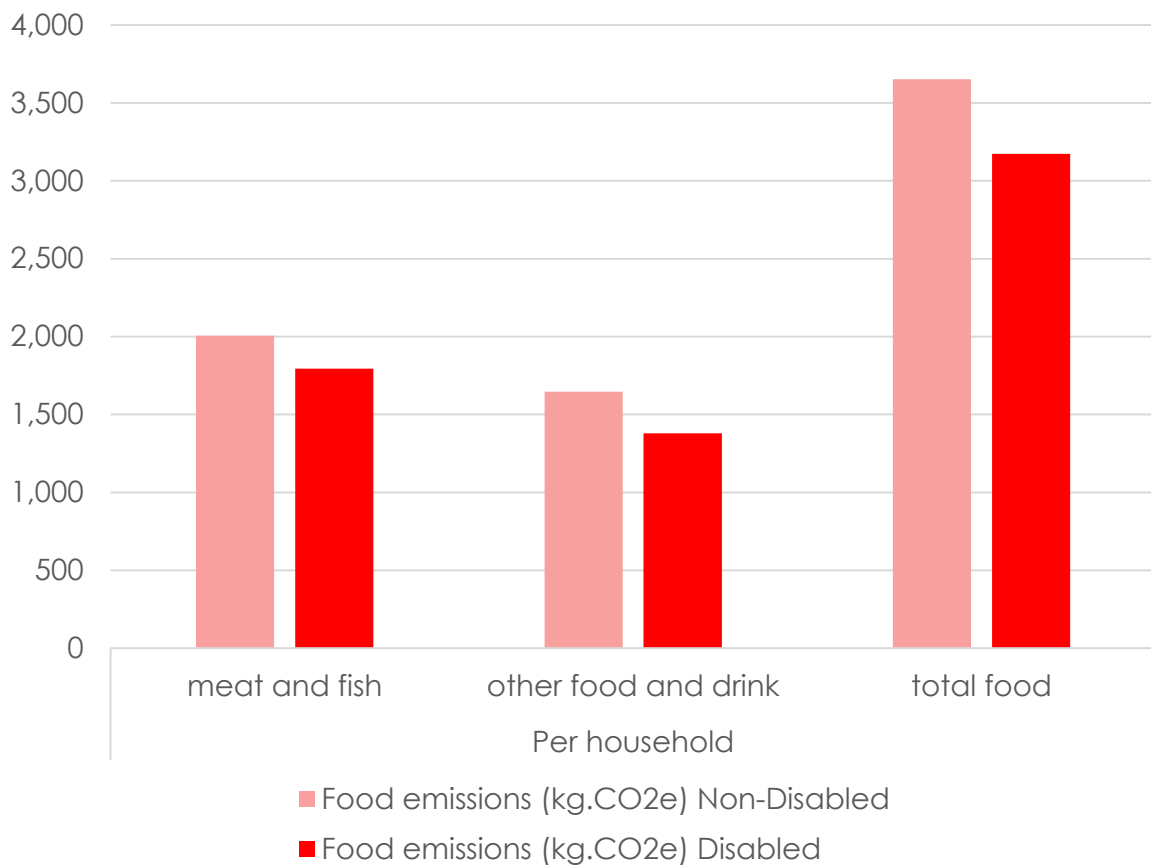
1. Identification of local and Bristol-wide transport schemes aimed at reducing emissions, and working to ensure the needs of the Disabled community are being properly addressed in the design of these schemes.
2. Engagement campaign with existing public transport providers in Bristol to ensure policies designed to enable the Disabled community to use public transport are being effectively implemented by staff members – e.g. spaces on buses for mobility aid users are always vacated when needed by a Disabled person.
3. Communications campaign to communicate the mobility needs of the Disabled community to the general public in Bristol, with the aim of improving the experience of the Disabled community on public transport and in the broader urban realm.
4. Map local pedestrian and cycle routes which are wheelchair and electric scooter-friendly, with links to broader Bristol, and identify areas of improvement – explore opportunities to partner with Sustrans and other transport organisations to address these.
5. Engage with local businesses to understand their transport behaviours and opportunities for reducing their transport carbon emissions
6. Share stories of Disabled residents who have electric or hybrid vehicles.

5. Food & diet



24% of the carbon emissions from households with at least one Disabled person come from the things that the residents eat and drink. Detailed below is further information on the split of emissions across meat/fish and other food and drinks.

a. Annual food and drink-related emissions



Average annual food emissions (kg.CO_{2e})

	Emissions type	Non-Disabled	Households with at least one Disabled person
Total	meat and fish	300,981,190	75,716,191
	other food + drink	247,240,883	58,195,549
	total food	548,222,073	133,911,741
Per household	meat and fish	2,005 (55%)	1,794 (57%)
	other food + drink	1,647 (45%)	1,379 (43%)
	total food	3,652	3,173

b. Where do food-related emissions come from?

So, where do the emissions from our food actually come from?

Without understanding this it can be difficult to know what we can do to change the carbon footprint of what we eat and drink.

Research shows us that changing what we eat will have the greatest impact on carbon emissions, rather than necessarily where our food has travelled from – although, of course, eating locally-produced food brings other benefits such as supporting local farmers, having more control over mandating more ethical and environmentally-beneficial growing practices, and creating opportunities for people to better understand where the food they eat comes from and how it's grown or made.

Whilst transport emissions are actually very small for most raw food products, many emissions come from land use change (e.g. forest being cut down and converted into arable farmland) and on-farm practices (e.g. emissions from fertilisers, machinery, and methane from cows). Also, the emissions from a food item can really vary depending on how it is grown or reared. But it is clear that animal products, and most significantly beef and lamb, account for the largest proportion of food-related emissions. Explore the BBC's Climate Change Food Calculator to better understand how food and drink items compare:

<https://tinyurl.com/y8cvstuh>³.

Of course, tragically, much of the food that we buy also ends up being wasted. The amount of food wasted 'post-farm-gate' in the UK is equivalent to 22% of food purchased – and 70% of all this food waste is from households. Whilst some of this is composted, about half of *edible* food that is wasted ends up in landfill or the sewage system⁴.

c. Reducing food & diet-related emissions

Outlined below are the headline objectives from Bristol's One City Climate Strategy which are relevant to food. They outline changes that are needed to the city's food-related activities by 2030 if Bristol is to be the carbon neutral and climate resilient city that it has committed to be.

³ For further information, you can also read this Our World in Data (Oxford University) study: <https://ourworldindata.org/food-choice-vs-eating-local>

⁴ [WRAP](#), 2020

Bristol's One City Climate Strategy: Objectives for food

1. Sustainable urban food production potential is maximised and used as a mechanism for active community participation and education in food sustainability.
2. Bristol's citizens will have a more plant-based diet, minimise food waste and support an increase the market for sustainable and carbon neutral food.
3. All businesses and organisations, and all public and VCSE service organisations, in Bristol are carbon neutral (direct and supply chain emissions).

Here are some examples of community and Bristol-wide initiatives that could contribute to achieving these objectives, whilst simultaneously realising multiple co-benefits for the community:

1. Awareness raising campaign highlighting which foods have the highest carbon intensity – partner with other Bristol communities to make this Bristol-wide.
2. Awareness raising campaign to reduce food waste, and increase composting of inedible food items.
3. Accessible cookery classes which explore ways to reduce food waste.
4. Set up bulk buy schemes (with delivery services) of quality food items to increase affordability.
5. Set up vegetable box schemes to increase access to healthy and affordable fruit and vegetables.

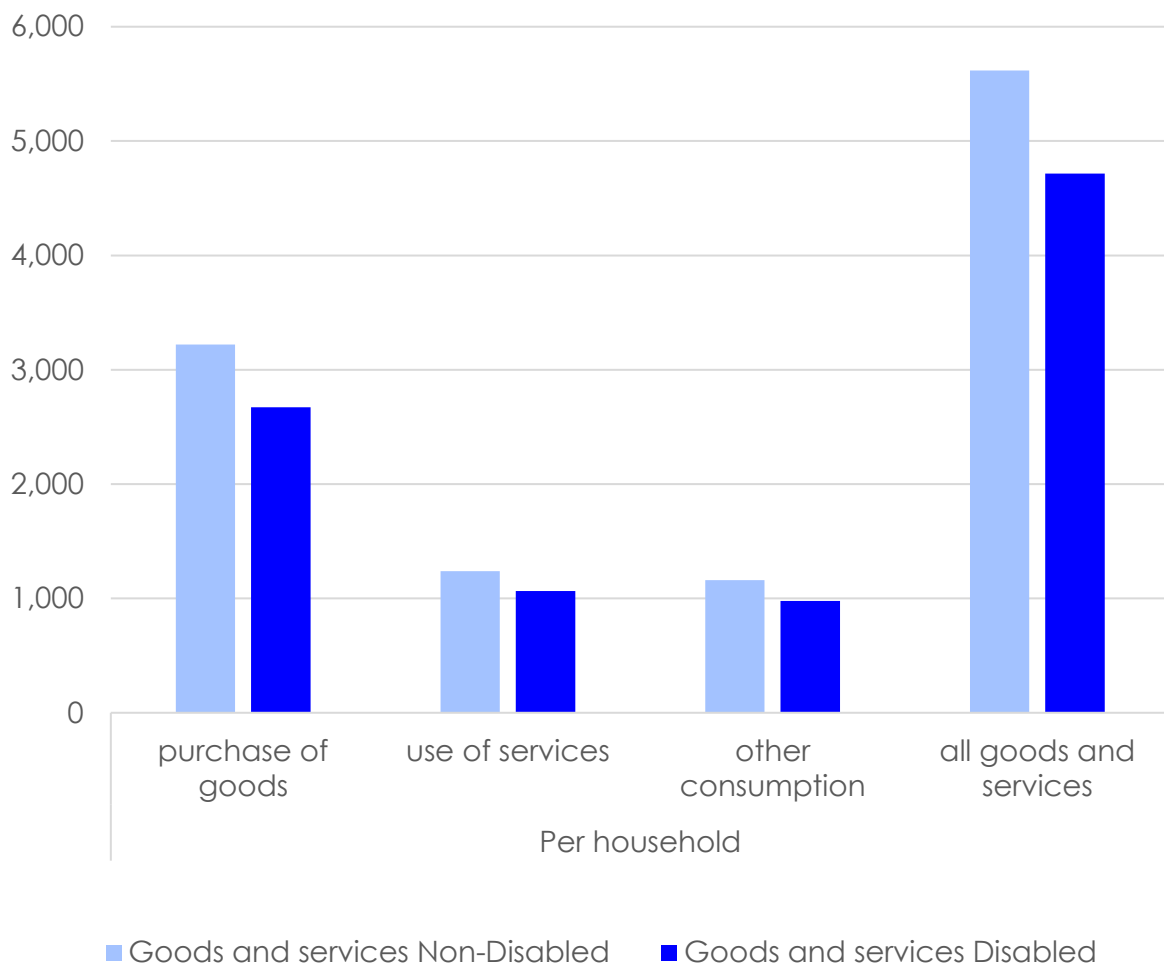
6. Establish (or support existing) accessible community food growing projects to provide space to engage residents in learning about food growing and healthy, more sustainable eating.
7. Encourage local and Bristol food businesses to commit to reducing carbon and waste associated with food and drink, such as the [Courtauld Commitment 2025](#)
8. Set up a community fridge so surplus items can be easily redistributed (learn best practice from existing community fridges in Bristol).

6. Goods & services



21% of the carbon emissions from households with at least one Disabled person come from the buying of goods, 8% from the use of services, and 7% from other consumption activities such as leisure and entertainment.

a. Annual emissions from goods & services



Goods – all household goods (not food), including homeware, toiletries, medicines, furnishings, electronic goods, appliances, & large items such as cars.

Services – use of services, including maintenance and repair of home, vehicles and other equipment, banking and insurance, medical services, treatments, education costs, communications (e.g. TV, internet, phone), and other fees and subscriptions.

Other – leisure, entertainment, sporting or social activities.

Average annual goods and services emissions (kg.CO_{2e})

		Households with at least one	
	Emissions type	Non-Disabled	Disabled person
Total	purchase of goods	483,478,232	112,804,303
	use of services	185,849,016	44,931,631
	other consumption	174,018,892	41,299,361
	all goods and services	843,346,140	199,035,295
Per household	purchase of goods	3,221 (57%)	2,673 (57%)
	use of services	1,238 (22%)	1,065 (22%)
	other consumption	1,159 (21%)	978 (21%)
	all goods and services	5,618	4,715

Where do emissions from goods we buy and services we use come from?

All goods that we buy will have had carbon emitted in their making (including the sourcing of raw materials), packaging, shipping and sale. Without clear carbon labelling, it is difficult to know the scale of emissions resulting from each item, but it is clear that with every new product made, more carbon is emitted (and more resources are extracted and sourced – which itself can have huge environmental and social impacts). Reducing how many new goods we buy in the first place is the best place to start in terms of reducing goods-related emissions; and then of course re-using and repairing items where goods are needed.

Carbon emissions from the services we use will relate to the energy used by that service provider (e.g. heating in a leisure centre, pub or hospital), as well as the carbon embedded in the goods they use (e.g. gym equipment, vehicle repair machinery).

b. Reducing goods and services-related emissions

Outlined below are the headline objectives from Bristol's One City Climate Strategy which are relevant to the buying of goods and the use of services in Bristol, outlining what changes are needed by 2030 if Bristol is to be the carbon neutral and climate resilient city that it has committed to be.

Bristol's One City Climate Strategy: Objectives for goods & services

1. Bristol's retail economy has transitioned to high quality, durable products that can be easily repaired.
2. Everyone follows principles of responsible consumption, using and buying less and buying carbon neutral goods and services.
3. All businesses and organisations, and all public and VCSE service organisations, in Bristol are carbon neutral (direct and supply chain emissions).
4. Renewable energy generation within the city will be maximised, including approximately 350MW of solar, and 'smart electricity' solutions will be widely adopted.
5. The energy performance of existing buildings is improved to minimise heat demand, whilst also preventing overheating.

Here are some examples of community and Bristol-wide initiatives that could contribute to achieving these objectives, whilst simultaneously realising multiple co-benefits for the community:

1. Set up a regular and accessible repair café, learning from existing ones in Bristol. This could include opportunities for residents to upskill so they can upcycle, make and repair items.
2. Create a community re-use and repair guide.
3. Grow the local second hand market through increasing opportunities to regularly swap and sell second-hand items.

4. Set up accessible streetbanks / library of things – enabling neighbours to share household items such as power tools, sewing machines, lawn mowers.
5. Create a disability aids repair and re-use business run by and for Disabled people.
6. Engagement campaign with Bristol's Clinical Commissioning Group and
7. Encourage local businesses to reduce their carbon emissions, signposting them to schemes which will help them, such as the [Climate Action Programme](#), and inspire them, such as the Bristol Green Capital Partnership's Climate Leaders Group.
8. Encourage businesses to switch to a green energy provider, such as Ecotricity or Good Energy.

7. Waste

1% of carbon emissions from households with at least one Disabled person come from the management of the waste that they generate (a lack of more detailed data on waste and recycling streams below local authority level has meant that emissions associated with waste have been distributed out evenly across the population).

Bristol's recycling rate is actually the highest across all of the English core cities, with 47% of waste being recycled (the national average is 45%). The city has also experienced a reduction in 'landfill' waste, which means we are creating less waste as a city⁵.

But it is important to remember that the emissions from the *management* of waste represent a fraction of the emissions associated with every item that ends up in our bins or recycling boxes.

a. Reducing waste-related emissions

Outlined below are the headline objectives from Bristol's One City Climate Strategy which are relevant to the generation and management of waste. They outline changes that are needed to how the city generates and manages waste by 2030 if Bristol is to be the carbon neutral and climate resilient city that it has committed to be.

⁵ [Bristol Waste Company](#), 2020

Bristol's One City Climate Strategy: Objectives for waste

1. Bristol will generate no carbon emissions from waste management.
2. Significant levels of waste reduction (particularly for food, textiles, and plastic).
3. At least 65% of all 'waste' is repaired, recycled or re-used.
4. All businesses and organisations, and all public and VCSE service organisations, in Bristol are carbon neutral (direct and supply chain emissions).

Here are some examples of community and Bristol-wide initiatives that could contribute to achieving these objectives, whilst simultaneously realising multiple co-benefits for the community.

1. Awareness raising campaign to reduce waste going to landfill and increase recycling. This could include research to better understand the key barriers to recycling.
2. Street-level project, with household-specific targets to reduce the weight of black bin waste.
3. Awareness raising campaign to reduce food waste, and increase composting of inedible food items.
4. Set up a regular and accessible repair café, learning from existing ones in Bristol. This could include opportunities for residents to upskill so they can upcycle, make and repair items.
5. Create a community re-use and repair guide.

8. The role of nature

The natural environment is critical to our well-being and the climate resilience of our city – cleaning the air we breathe, improving our mental and physical health, reducing the risk of flooding and extreme temperatures (the two major climate change risks facing Bristol in the coming years), and acting as a carbon ‘sink’ (absorbing carbon from the atmosphere). Whilst nature is so important it is also collapsing at an alarming and unprecedented rate.

Outlined below are the headline objectives from Bristol's One City Climate Strategy which are relevant to the natural environment.

Bristol's One City Climate Strategy: Objectives for the natural environment

1. All new developments maximise tree and plant cover.
2. The city's natural environment has been restored, preserved and enhanced to maximise carbon sequestration (absorption), climate resilience and health and wellbeing.
3. Everyone lives and works within a 10-minute walk of a quality green space with sufficient tree canopy to provide refuge for citizens during climate change-induced extreme heat conditions.
4. Bristol businesses and organisations are wildlife friendly, providing habitats, bird boxes, and sponsoring the development of green spaces.

Below are some examples of community-level initiatives that could contribute to achieving these objectives.

1. Map the community's green spaces and highlight opportunities to create green corridors to link these spaces and create a more connected ecological network.
2. Explore opportunities to increase tree cover in your community – this could be through on-street planting, planting trees in existing green spaces, and encouraging larger land owners/managers to increase tree cover on their land.
3. Map access to green space (e.g. using Friends of the Earth's ['Green Space Rating' tool](#)) highlighting parts of the community with high levels of green space deprivation. Use this information to campaign to the council to improve green space provision.
4. Awareness raising campaign stressing the benefit of garden space and the negative impacts of covering front and/or back gardens in hard-standing.

9. Pen portraits: Bristol's Disabled community

Here are 3 pen portraits of Disabled people living in Bristol. They provide some insight into their daily living, and some of the factors which may (or may not) shape their carbon footprint.

Karen lives in a bungalow in Bristol.

Karen needs to keep her house really warm to help with her multiple sclerosis, osteoporosis and chronic obstructive pulmonary disease. She has gas central heating on throughout the year, and also has electric heaters for extra heat. The constant heating leads to very dry air so she needs a humidifier to add moisture to the air. Her heating bills are really high as a result of needing to keep the house extra warm.

Karen has electric wheelchairs to get about at home. To travel out of the house on a very local journey Karen uses her electric wheelchair. To journey further she uses her large adapted car which can carry her electric scooter to use at either end of her journey. Her wheelchairs and scooter need charging regularly.

Karen finds it very difficult to use the bus because they rarely have enough space to accommodate her wheelchair. She finds it impossible to travel on the train because the space provided for wheelchairs in the carriages and the toilets is too small, and provision of support staff to assist her is not reliable enough. She has had much more positive experiences travelling on public transport in other countries.

Laura lives in Bristol.

To travel around in and outside her home she has 3 electric wheelchairs (1 on each floor and a spare) and 1 manual wheelchair. She has an automatic front door opener and a stair lift to travel upstairs.

Upstairs Laura has various electrical pieces of furniture – including her bed and electric blanket (the blanket is critical for her when her back is bad).

Laura's house isn't very energy efficient – the back gets especially cold during the colder months, and she can feel cool air flowing through the house. Conversely, in the warmer months she uses a fan at night to stay cool – her double glazing is very old and the windows do not open (and the cost of replacing them is prohibitively expensive!). Despite this Laura doesn't think her energy consumption is especially high – and because she works away from home she doesn't have to keep the house warm/cool throughout the day.

When Laura goes to the shops she travels using a heavy duty electric wheelchair – she calls this 'her car'. All of Laura's wheelchairs need to be charged every night.

To travel to and from work Laura has a pre-booked taxi. She has had difficulties in the past finding a company to provide wheelchair accessible cars, and when Laura has taken un-booked taxis she has had many experiences of being refused a lift.

Emma lives in Bristol.

She doesn't feel like her home is much different to your average home.

Emma has a few aids to assist her with only having one arm, most of which don't use electricity. She has software for her work computer which is voice activated.

Emma doesn't have a car – she travels around Bristol by cycling and walking. She uses public transport to travel further afield. For environmental reasons she chooses not to fly.

Emma has done a lot of work with environmental campaign groups; she works to lower the barriers to these spaces for Disabled people.

As a Disabled person, Emma experiences a lot of attitudinal barriers in her daily living in Bristol.

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