Petersfield Climate Action Network (PeCAN)

Towards a Residents' Action Plan on Climate Change

This document analyses publicly available data on carbon emissions in the East Hampshire area to inform discussions about a local Climate Change Action Plan.

By Danny Lee and Greg Ford, August 2020

As the climate crisis clock continues to tick, with modern life activities pushing our fragile climate and ecosystems towards cliff edges, every area needs a plan to become carbon neutral as soon as possible.

Residents and local government have major roles to play in reaching this goal and must focus their efforts on the actions that will do most to decarbonise our communities. To help identify these high-impact actions, PeCAN has looked at the East Hampshire area's baseline carbon emissions, the target needed to reduce emissions in line with the Paris Agreement, and an emissions reduction pathway for the area and for individual households.

The aim is to feed discussions about what actions should be prioritised in any climate change action plans that emerge at local level. To aid that discussion further, we have included in Annex C a list of actions that have been proposed in comparable districts.

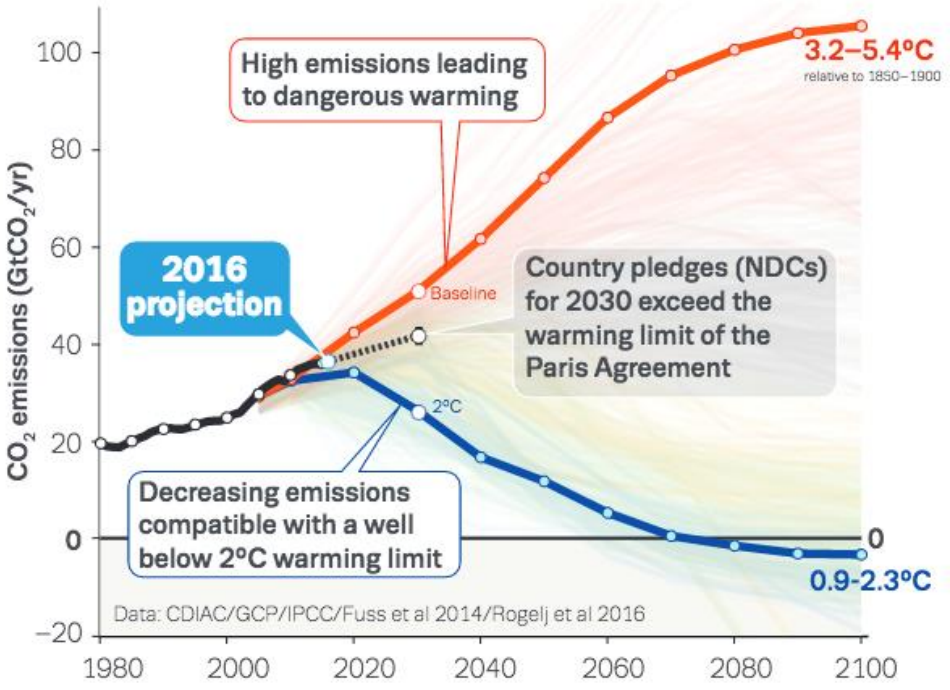
The challenging situation

Global temperatures have been rising for over a century, speeding up in the last few years, and are now the highest on record. The result is that the climate change and biodiversity crises continue to grow, bringing extremely dangerous warming consequences to people, communities, and nature.

As it widely reported, global heating is linked to the *cumulative* amount of CO2 and other greenhouse gases in the atmosphere. In July 2020, the monthly average CO2 measured at Mauna Loa was 414 parts per million. Returning to a safe level of 350ppm means putting global emissions into reverse; it is not enough to reduce our emissions; we have to make them negative.

This involves a very sharp reduction in global emissions of CO_2 in the next decade, moving from the orange line to the blue line in Figure 1 below. The Paris Agreement aimed to limit global warming to "well below 2C" and, ideally, below 1.5C. At current emission rates, we will probably blow through the 1.5C budget sometime in the mid-2020s.

Figure 1 - Carbon budget and target temperature limits



Source: www.carbonbrief.org

The UK's national net zero 2050 carbon target, while politically ground-breaking, does not go far enough or quickly enough to contribute to limiting global warming to 2 degrees Celsius, let alone 1.5 degrees. Many scientists and policymakers advocate frontloading emission reductions to a 2030 target, including more than half of all UK councils that have declared a climate emergency.[1]

Direct emissions from transport, heating and energy must be reduced quickly. So also, must indirect emissions from consuming goods that are manufactured and transported from elsewhere. Unfortunately, carbon emissions from the production of imported goods, along with shipping and aviation emissions, are excluded from the UK's national carbon accounting, so much of our consumption-based emissions are not fully accounted for.

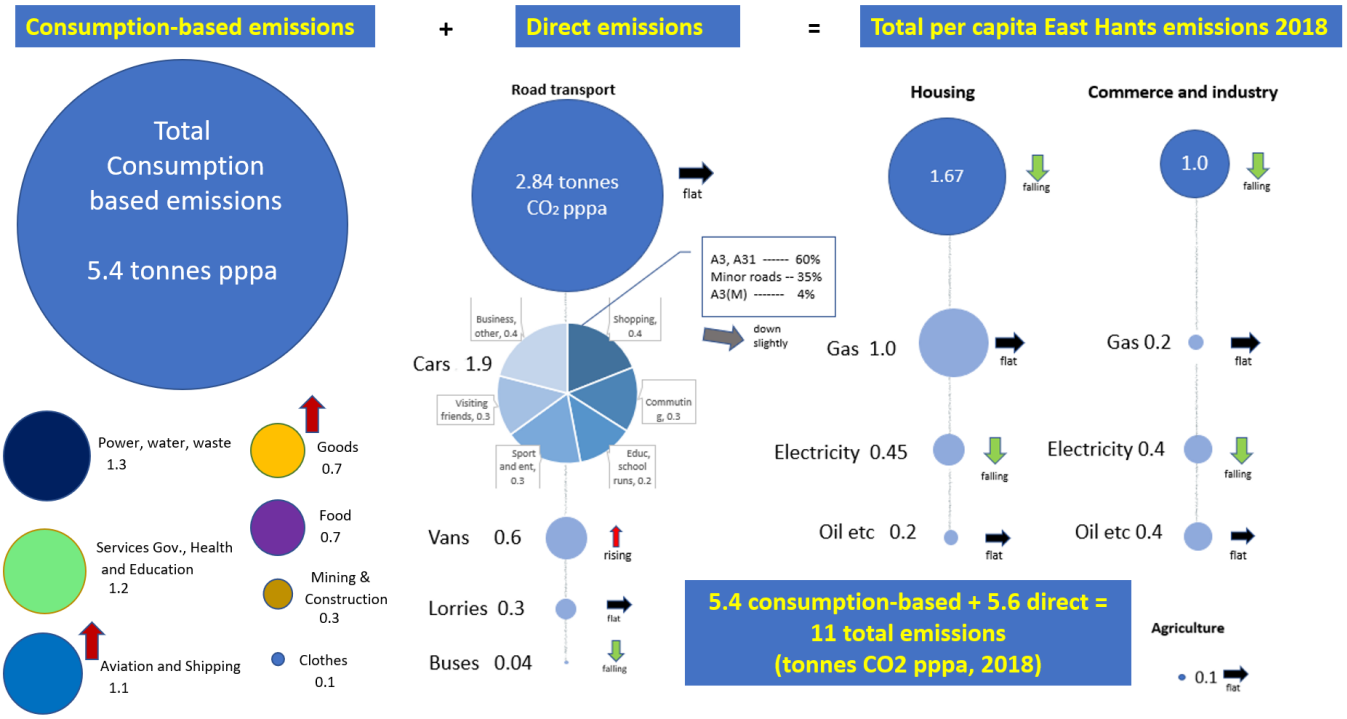
> *"Increasingly, the impact of our consumption occurs outside the UK creating a situation where our emissions inside the country reduce while emissions associated with imports increase. It is essential that the UK commits to reducing its emissions both inside and outside the UK to adequately respond to the climate crisis."* **Professor John Barrett from the University of Leeds**

A strong case can be made for including indirect consumption-based greenhouse gas emissions in local climate action plans.[2] The evidence used to inform EHDC's corporate strategy 2020-2024 (and by implication the climate strategy) refers only to direct emissions and therefore captures only a part of the full picture. The overall challenge is therefore to reduce both consumption-based and direct emissions, as summarised in Figure 2 below.

[1] https://www.climateemergency.uk/
[2] https://www.sciencedirect.com/science/article/abs/pii/S1462901109001038

Per capita carbon emissions in East Hampshire in 2018 may be as high as 11 tonnes a year, counting emissions from consumption as well as direct emissions.

Figure 2 - Average annual consumption-based and direct emissions per person in East Hampshire (2018)



In Figure 2, the consumption-based emissions on the left are based on 2017 data for Surrey, which have been increased by 1% to reflect population changes to 2018 and reduced by 20% to reflect lower average household incomes in Hampshire, per ONS data, assuming a direct correlation between income and consumption. The data on direct emissions are taken from BEIS data for East Hampshire, covering domestic and business uses of electricity, gas and other fuels, road transport, and agriculture. Further information about the data and methodology is contained in Annexes A and B.

There may be significant overlaps and double counting between the indirect consumption emissions and the direct emissions above, for example between power and electricity or between road transport and goods, food and construction. National data on the UK's carbon emissions typically give numbers of around 5.5 tonnes of CO2eq[3] per person for 2018, close to the direct emissions data on their own. However, this data is based on international guidelines that exclude international aviation, shipping and imported embedded carbon.[4] We have added these emissions to the estimate above. As we could not find data to quantify the overlaps between consumption emissions and direct emissions and as it is prudent to overestimate rather than underestimate, we have chosen to present both sets of data and their breakdowns rather than attempting to adjust the consumption

[3] CO_2 *equivalent*, abbreviated as CO_2-*eq* is a metric measure used to compare the *emissions* from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming. For example, one million metric tons of methane is **equivalent** to **emissions** of 21 million metric tons of **carbon dioxide**.

[4] https://www.carbonbrief.org/analysis-uks-co2-emissions-fell-for-record-sixth-consecutive-year-in-2018

data further. One benefit of doing this is to give more granularity that can help identify actions that will reduce emissions caused in East Hampshire, regardless of where the associated CO2 is emitted.

The analysis identifies 5.4 tonnes per capita of CO2 equivalent emissions from personal consumption and 5.6 tonnes from direct emissions, making a potential total of up to 11 tonnes of CO2 eq per person per year in East Hampshire, before removing any overlaps. This figure can be reduced by around 0.4t CO2 pppa to reflect the effects of land use, land use change and forestry (LULUCF) which are negative thanks to the largely rural landscapes in East Hampshire.

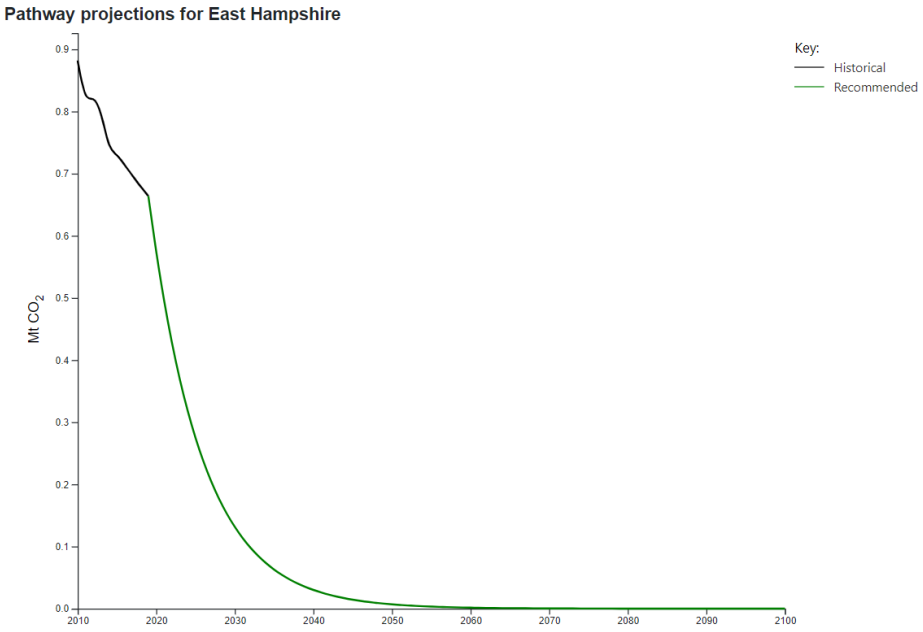
With a population of 120.7k in 2018, East Hampshire total emissions would be 651.9 kilo tonnes (KtCO2) from consumption and 626 KtCO2 from direct emissions (after LULUCF), or a total if these are combined of 1,278 KtCO2 for the East Hampshire area.

The Tyndall Centre targets

The University of Manchester's Tyndall Centre for Climate Change Research has estimated that for East Hampshire to make its fair contribution towards the Paris Climate Change Agreement, it should stay within a maximum cumulative carbon dioxide emissions 'budget' of 4,200 KtCO2 for the period of 2020 to 2100. This refers only to direct emissions.[5]

At 2017 rates of emission, the Tyndall Centre reckons East Hampshire's cumulative direct emissions would exceed the budget by 2026. The Tyndall Centre therefore recommends that the district's direct emissions should fall by 13.7% a year with the bulk of the reduction occurring before 2030 (see Figure 3). To be consistent with that, we assume that consumption-based emissions including aviation and shipping should follow a similar reduction pathway.

Figure 3 – Tyndall Centre recommended emissions reduction pathway



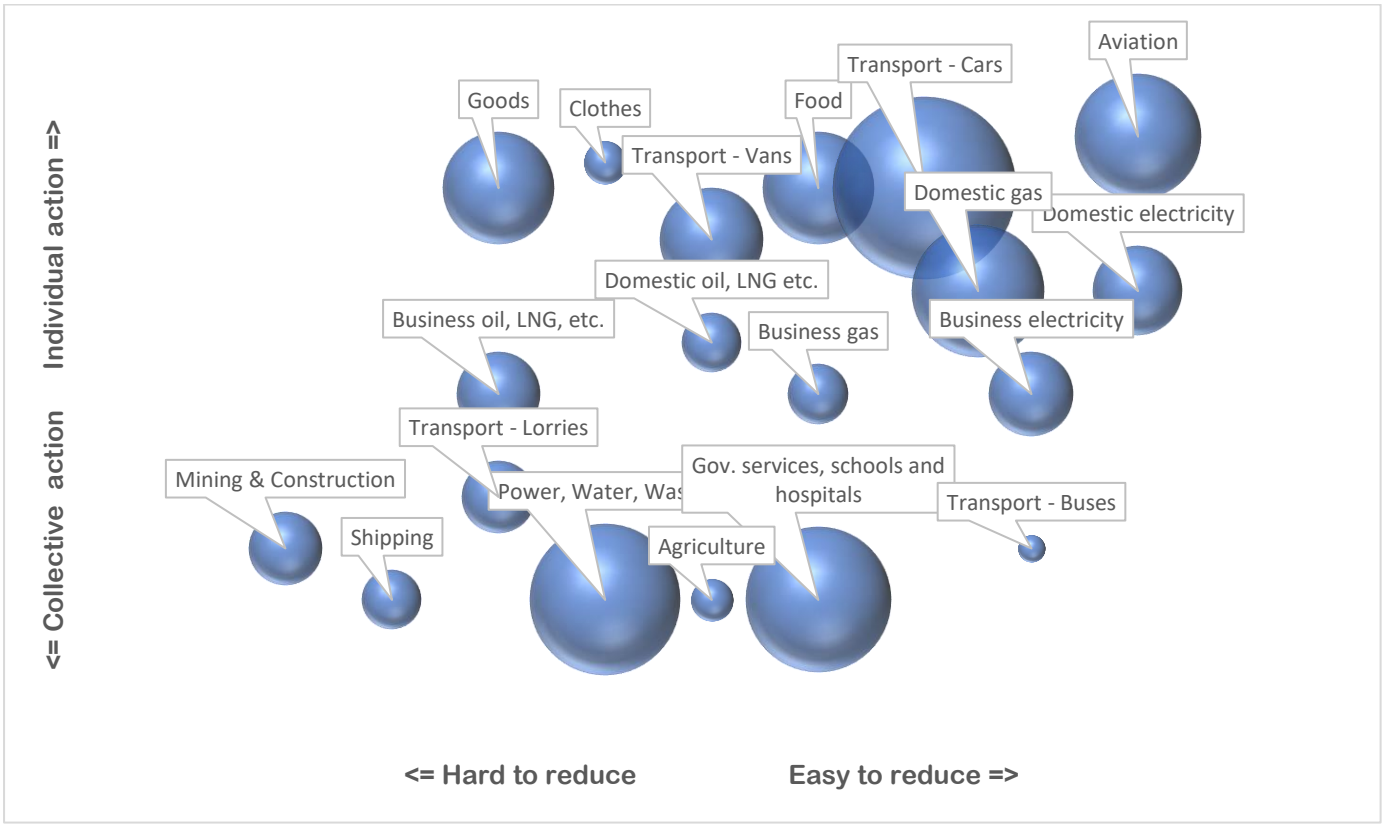
[5] The Tyndall data is based on BEIS LA statistics 2017 CO_2 emissions East Hampshire (excluding aviation, shipping, process CO2 emissions from cement production and those from LULUCF)
https://carbonbudget.manchester.ac.uk/reports/E07000085/print/

Which emissions can we influence?

As local residents, our ability to reduce carbon emissions varies widely by activity. It is relatively cheap and easy for individuals and organisations to reduce emissions from air travel, car travel, food, clothing etc. if we choose. With more cost and effort, people can reduce emissions from heating and powering their homes and places of work. Local authorities can do much to influence and directly enable such choices. But reducing emissions from activities such as shipping, construction, schools, hospitals, grid power and road haulage will require industry-level strategies, which individuals and even local authorities may feel they can do relatively little to influence. It is noted, even though carbon dioxide removal (CDR) is expected to be required to achieve the 1.5°C target, it cannot replace drastic emissions reductions at a local level, as large-scale CDR is both challenging and expensive.[6]

Figure 4 shows the emissions for various activities in East Hampshire grouped along two axes: vertically, according to whether the associated emissions can be influenced at local level by individuals or if more collective efforts are needed involving local government, or national and industry level approaches; and horizontally according to the ease with which emissions can be reduced, given current technology. This suggests that a high impact local action plan should focus on the larger bubbles towards the top and right.

Figure 4 – Analysis of activities in East Hampshire by emission reduction potential

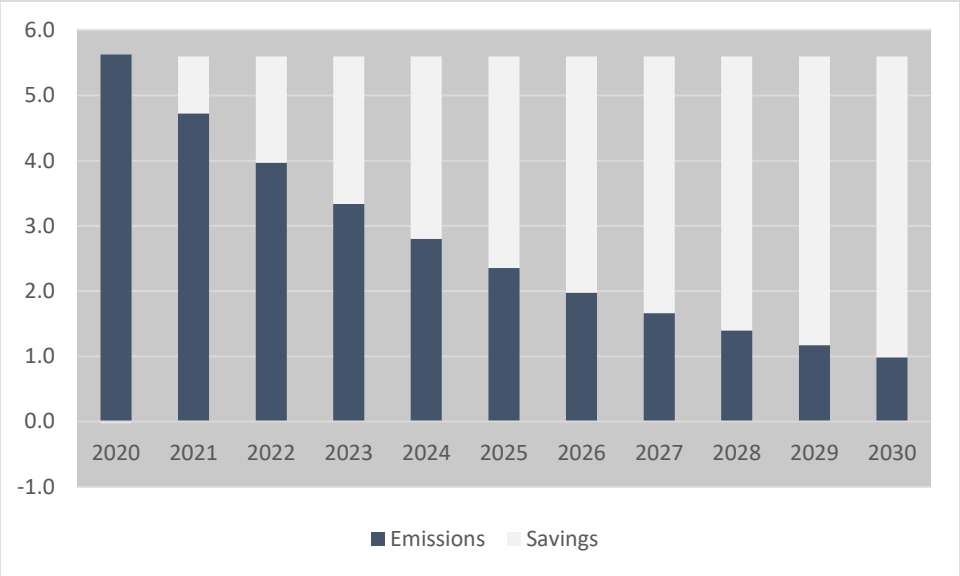


6 https://royalsociety.org/-/media/policy/Publications/2018/keeping-global-warming-to-1-5-C--challenges-opportunities.pdf

The household viewpoint

If as individuals we are to reduce our emissions to align with Paris goals and 1.5 degree of warming, following a similar trajectory to what the Tyndall Centre recommends, we will need to frontload our actions over this decade. From today's baseline in East Hampshire, that would mean reducing our individual emissions by nearly half a tonne a year every year, until our footprint has shrunk from 5.6 tonnes to just 1 tonne a year by 2030 counting only direct emissions (Figure 5). A similar reduction would be needed in consumption emissions.

Figure 5 - Personal CO2 reduction pathway for East Hants residents (t CO2eq pppa)



This gives us a memorable personal target of reducing our emissions to only one tonne a year. Achieving that through individual action will be challenging (see Rosalind Redhead's blog about her journey "One Tonne of Carbon per Year"[7]) but we are not acting alone: our energy and transport systems are changing. In addition, a large portion of those individual savings can be achieved by retrofitting our homes and changing our travel preferences. It is important to remember that it is always best to reduce our own emissions and avoid offsets of our carbon footprint. In most cases off-setting is ineffective because it does not avoid emissions entering the environment and accelerating climate change.[8]

Figure 6 looks at how such reductions in emissions might play out at household level.[9] It helps us to understand the true impact of our activities and allows identification of opportunities to make more sustainable choices.

The two most common sources of energy for **buildings** are purchased electricity and direct consumption of natural **gas** and other fossil fuels for heating and cooking, which together account

[7] https://rosalindreadhead.wordpress.com
[8] https://www.ethicalconsumer.org/energy/short-guide-carbon-offsets

[9] The infographic is from Energy Systems Catapult, a non-profit supported by UK Innovate.

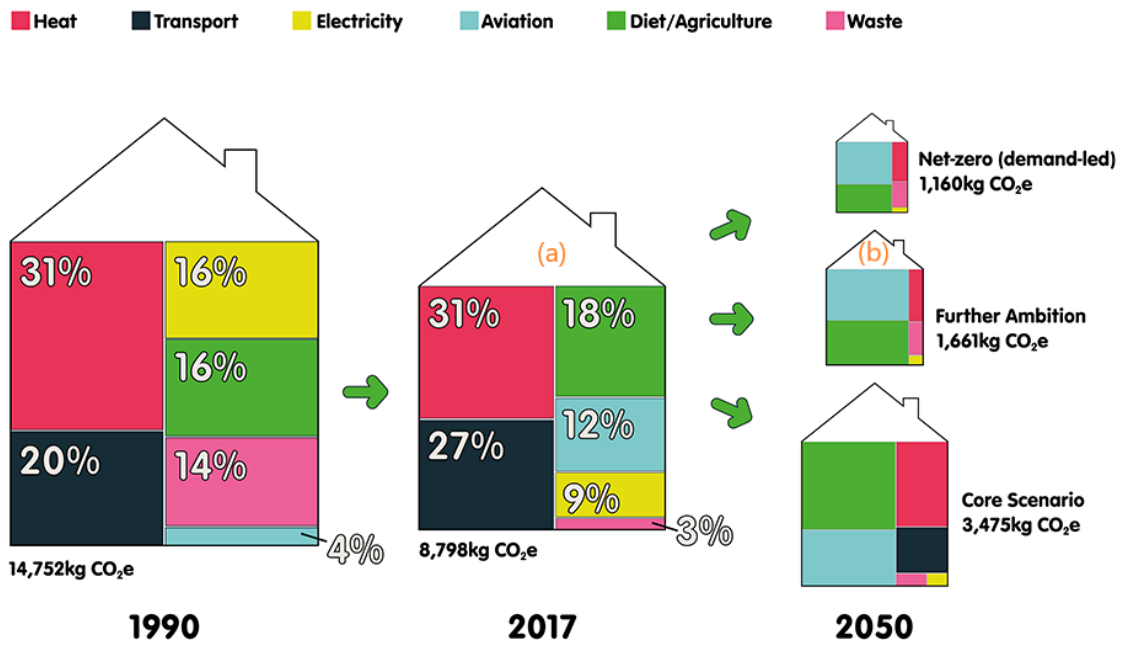
for nearly half of a typical family's carbon footprint. In a typical house, gas central heating is the single largest contributor of GHG emissions.

An overall annual reduction of 13-16% every year to 2030 would be roughly the same as moving from the house in the middle of this picture (a) to the "Further ambition" house in the middle on the right (b).

The two most obvious changes from (a) and (b) are that heating (the red area) shrinks to a small fraction as households move away from gas and on to low carbon systems such as heat pumps, electric heating etc., and that transport (the black area) vanishes completely as petrol and diesel cars are replaced with EVs. Emissions from electricity (in yellow) also shrink significantly as the percentage of fossil fuels in the UK energy mix reduces over time.

Interestingly, the infographic was produced before the Covid-19 lockdown and seems to assume that emissions from food and agriculture will halve but emissions from aviation will hardly change, even though cutting out flying is one of the easiest ways to reduce our carbon footprint.

Figure 6 – Household emissions reduction pathway[10]



Source: https://es.catapult.org.uk/reports/net-zero-living-carbon-free/

The emissions above represent only the operational aspect of net zero carbon; it is important also to consider embodied emissions, which represent the carbon emitted in the production of materials. In particular, the embodied emissions in buildings can be a very significant part of the 'life-cycle' or 'whole life' carbon footprint.

[10] The emissions are calculated on a *per household* basis (assuming 35 million households in 2050 compared to around 29 million today). The carbon figures are lower than the estimates in Figure 2 because they do not include aviation for business travel, imported goods and food, and emissions from business, industry and government services.

We have not sought to estimate embodied emissions or their overlap with other headings above, but this could be an area for further research.

Establishing a meaningful method for carbon reduction accounting based on the above CO_2 baselines and emissions proposals is an important part of separate research and collaboration.

Limitations in knowledge of the climate system mean that it is not possible to specify emissions pathways that result in global temperature being exactly 1.5°C or 2°C. However, the general nature of these pathways, and in particular the need to reach zero CO_2 emissions within the next few decades, is known with confidence.[11]

In the 2012 'How local authorities can reduce emissions and manage climate risk' report[12] it was highlighted that emissions reductions without local action will be insufficient and that there is significant risk that there will be limited activity. The report also underscored the need for an area-wide low-carbon plan.

Conclusion

The elements of a local climate change action plan will need to include a mix of individual and collective actions. What is clear is that no one can wait for the long awaited 'perfectly formed' and centrally resourced directives to deliver the necessary proactive action for the required step changes and higher pace of emissions reduction. The climate emergency requires urgent action now, starting with the actions that will have greatest impact in decarbonising our communities and filling the action gap.

The analysis above suggests that the actions that East Hampshire residents can take with the highest potential to reduce CO2 emissions are likely to be the ones that help us to:

- drive less in petrol/diesel cars,
- fly less, and
- use less natural gas or other fossil fuels to heat our homes.

Consuming fewer goods, eating less meat and producing more local, clean electricity would also make significant contributions.

Annex C contains an initial 'long-list' of ideas that might help to reduce carbon emissions in these key areas. Annexes A and B give provide more detail about the emissions data used in this paper.

[11] https://royalsociety.org/-/media/policy/Publications/2018/keeping-global-warming-to-1-5-C--challenges-opportunities.pdf

[12] https://www.theccc.org.uk/wp-content/uploads/2012/05/LA-Report_final.pdf

Annex A: Consumption-based emissions

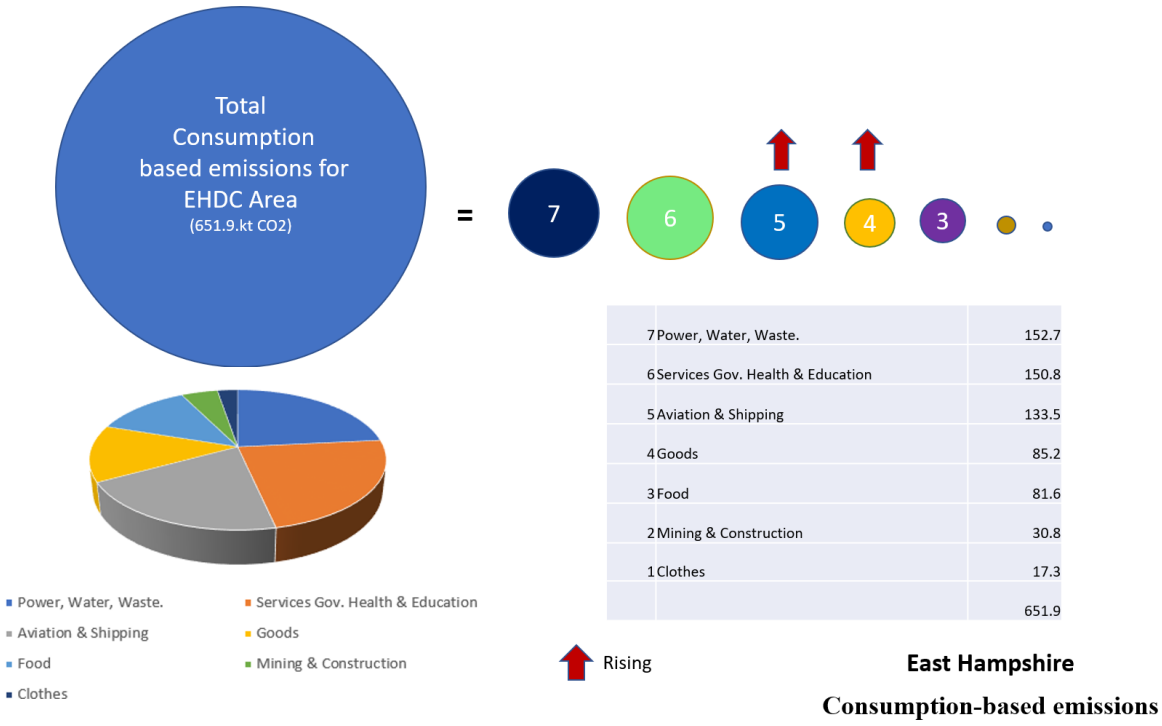
Individual action on climate change can include personal choices in many areas, such as diet, means of long- and short-distance travel, household energy use, consumption of goods and services, and family size.[13]

If an area needs a breakdown of major consumption categories to educate residents about their emissions footprint, or to develop a rough basis for prioritizing actions, then relying on pre-existing analyses, or on national or regional consumption emissions may be sufficient.

A WWF report[14] found that six sectors contributed to almost half (46%) of the UK's carbon footprint - a combination of domestic emissions and those from UK consumption emitted abroad: heating homes (9.7%), car fuel (8.6%), electricity (8%), construction (6.7%), agriculture (6.6%) and air travel (5.9%). **Only the largest three of these are associated with sectors which are expected to fully decarbonise domestically by 2050** under the UK Committee on Climate Change's pathway to decarbonisation.

Seven indicative behavioural-led consumption categories in **Figure 7** below show the focused choice for local action and priorities.

Figure 7 - East Hampshire - Total consumption-based emissions and sub-categories (kt CO_2, 2018)



7	Power, Water, Waste.	152.7
6	Services Gov. Health & Education	150.8
5	Aviation & Shipping	133.5
4	Goods	85.2
3	Food	81.6
2	Mining & Construction	30.8
1	Clothes	17.3
		651.9

Data source: University of Surrey

[13] https://www.sei.org/wp-content/uploads/2019/03/estimating-consumption-based-greenhouse-gas-emissions.pdf

[14] https://www.wwf.org.uk/updates/uks-carbon-footprint

The 651.9 $ktCO_2$ consumption-based emissions equates to 5.4 tonnes per person per annum (pppa). This is an average per capita calculation which does not account for variations between individuals, including those who do not consume (i.e., the very young) or differences in lifestyles and affluence.

East Hampshire's population is forecast to continue growing, further adding to the consumption-based emissions in the district.

Table 1 - East Hampshire increasing population

2017	119,392
2018	120,681
2019	124,205
2020	126,017
2021	127,560
2022	129,279
2023	130,789
2024	132,123
2025	133,108
2026	133,879

Source: https://www.hants.gov.uk/landplanningandenvironment/facts-figures/population/estimates-forecasts

Between 2017 and 2018 the population increase was 1% adding 8.157 ktCO2 of consumption-based emissions to the area. A further 3% increase in population between 2018 and 2019 will have added an additional 24.47 ktCO2 consumption-based emissions.

However, COVID 19 may produce a 2020 temporary emission drop before an economic recovery returns emissions to more normal incremental rises, unless the Hampshire County Council and the East Hampshire District Council Action Plans and local initiatives put in place urgent measures and actions.

This urgency is manifest as EHDC will see an increase in new East Hampshire dwellings of 9.5% which grows the population by an additional 5,120 residents by 2026.[15] This would result in an estimated increase in consumption-based emissions of 33.41kt CO_2 (4.1%), based on 2019 data. Our Local Authority will need to ensure these new residents integrate with any new local community carbon reduction initiatives to not jeopardise any reduction pathways.

The challenge is to rapidly educate behaviour as our emissions and economy continue to move from a manufacturing base towards the services sector[16] as more of the goods we buy and use are now produced overseas where the UK and local government have little influence on levels of emissions, both operational and embedded.

[15] Small Area Population Forecasts (SAPF) 2019

[16] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882939/Consumption_emissions_March_20_v9.pdf

There is some hope that both national and local government can influence and change our emissions from consuming health and education services. Consumers can reduce import-based '**Aviation & Shipping**' emissions by buying as much local produce and 'close-proximity' manufactured/produced goods, up to a point. A choice of lower carbon different personal modes of travel, i.e., do not fly, use fewer cruise liners, ferries and petrol or diesel cars, use more trains and EVs would help.

For **'Services, Gov. Health & Education'** a similar argument applies - use local services and and/or organisations with exemplar low carbon and environmental footprints, where possible. With that in mind, it is suggested a priority action for East Hampshire consumers for consumption-based levels of consumption is to focus on the four more every-day consumption categories:

Power, Water, Waste.
Goods
Food
Clothes

These first order regular consumption categories are 52% of all consumption activities that both the district authority and residents can do something about with relatively greater ease.

We should not forget the provenance of the consumption-based emissions is associated with the goods and services that are consumed by a region, are more difficult to calculate than production-based emissions. There is no single source of consumption-based emissions data available in the UK. Therefore, a hybrid method for estimating the carbon footprints of human settlements in the UK explicitly linking global supply chains to local consumption activities and associated lifestyles was used for the East Hampshire consumption-based emissions shown in Figure 2.

The work of Minx et al underpinned the methodology that combines both input output data with population characteristics by district.[17] East Hampshire data was adapted from that created by the University of Leeds and PCANCities organisation (not linked to PeCAN)[18] which was reworked further by researchers at the University of Surrey for Surrey County Council.

The Surrey data includes consumption-based emissions in seven categories: food; goods; clothes; power, water and waste; mining and construction; government services including health and education; and aviation and shipping. We have reduced these by 20% to reflect differences in gross disposable household income levels per head (averaged across the sub-regions in Surrey and Hampshire at £28,245 and £22,703 per ONS 2017),[19] on the assumption that consumption emissions broadly follow income levels.

The data was further adjusted for population size: the population of Hampshire is about 13.5% larger than Surrey and the East Hampshire population (120,681 in 2018) represents 6.54% of Hampshire,[20] to produce a total consumption-based emission calculation for Hampshire of 651.9 ktCO2 in 2018.

In descending order of emissions (kt CO_2), the seven consumption categories for East Hampshire are shown below.

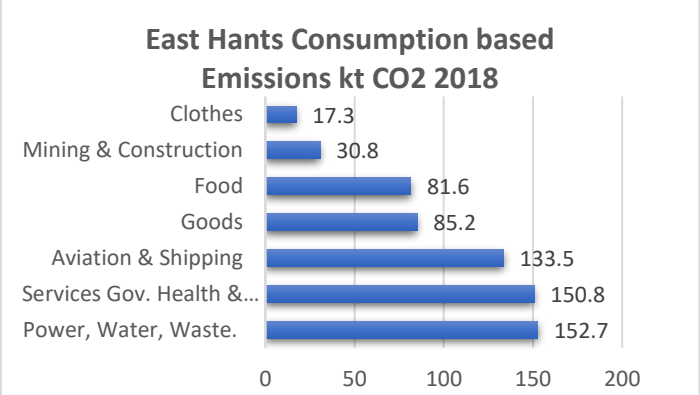
[17] https://iopscience.iop.org/article/10.1088/1748-9326/8/3/035039

[18] https://pcancities.org.uk/sites/default/files/East%20Hampshire.pdf

[19] https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/bulletins/regionalgrossdisposablehouseholdincomegdhi/1997to2017

[20] https://www.hants.gov.uk/landplanningandenvironment/facts-figures/population/estimates-forecasts

Figure 8 - East Hampshire consumption-based emissions by category

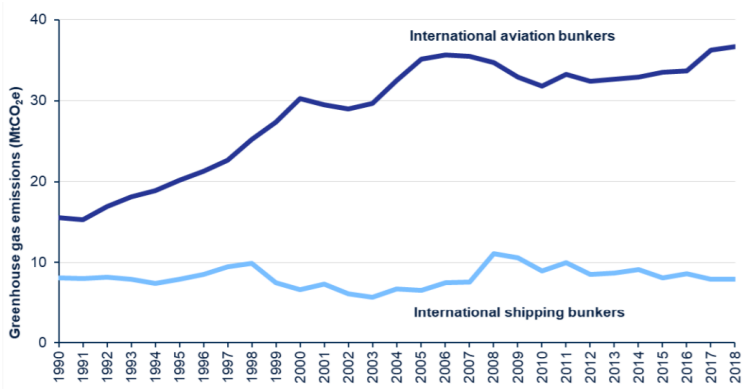


East Hampshire's per capita emissions from consumption in 2018 are shown in the table:

		Total	Per capita
1	**Power, Water, Waste.**	**152.7**	**1.3**
2	**Services Gov. Health & Ed**	**150.8**	**1.2**
3	**Aviation & Shipping**	**133.5**	**1.1**
4	**Goods**	**85.2**	**0.7**
5	**Food**	**81.6**	**0.7**
6	**Mining & Construction**	**30.8**	**0.3**
7	**Clothes**	**17.3**	**0.1**
	Total (kt CO_2)	**651.9**	**5.4**

Aviation and shipping emissions are often quoted together but can be split roughly 80/20, with emissions from international aviation, based on international aviation fuel use from UK bunkers, still growing more than 1% a year up to 2018. Other aviation emissions relate to domestic flights and air freight. In addition, high altitude aviation has a greenhouse effect over and above that of carbon dioxide emissions from fuel alone, which is not reflected in these estimates.

Figure 9 – UK GHG emissions from UK-based international aviation and shipping bunkers (MtCO2e)



Source: BEIS, 2018[21]

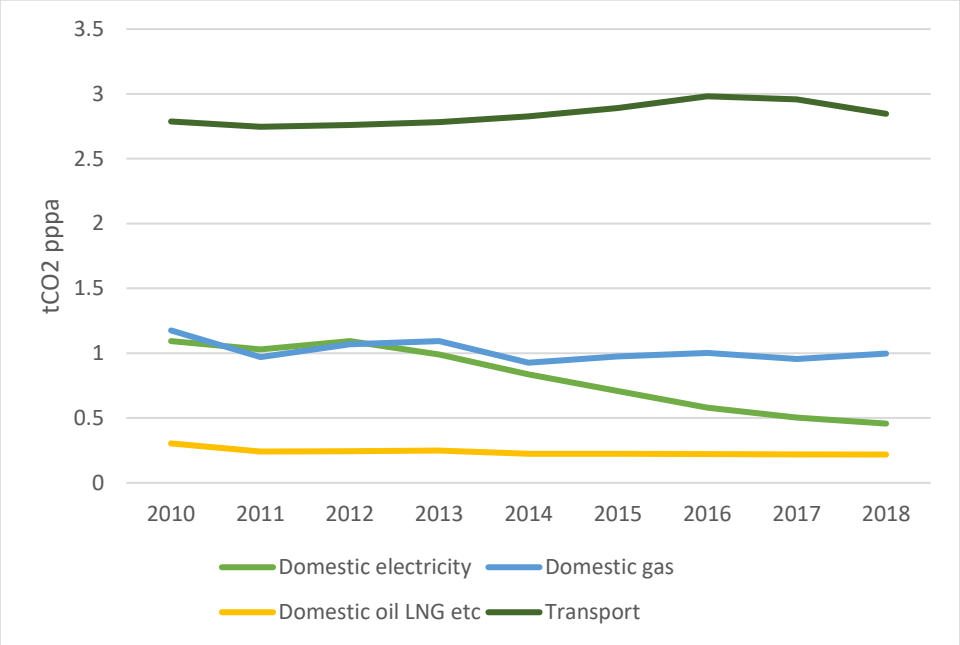
21

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/862887/2018_Final_greenhouse_gas_emissions_statistical_release.pdf

Annex B - Direct Emissions

The data on direct emissions for East Hampshire are extracted from tables published by BEIS, "UK local authority and regional carbon dioxide emissions national statistics: 2005-2018". Most categories of direct emissions are falling, albeit slowly.

Figure 10 - East Hants domestic carbon emissions

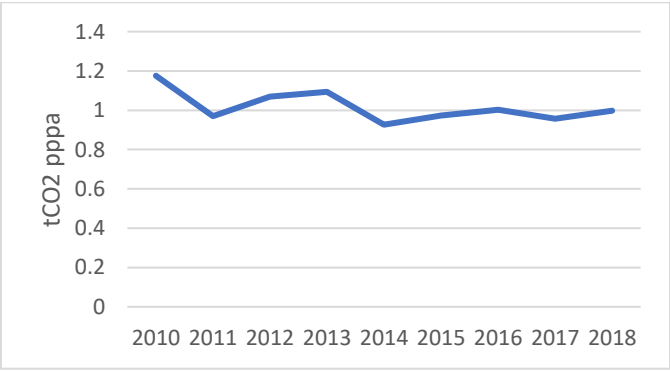


Source: BEIS, 2018

Heating

Emissions from domestic gas have barely moved since 2011, perhaps due to the expense and difficulty of replacing gas and oil central heating systems with low-carbon systems, such as heat pumps, electric heating, or district heating. As building standards and awareness of government subsidies such as the Renewable Heat Incentive and Green Homes Grant improves, this should start to improve.

Figure 11 - Domestic gas emissions, East Hants

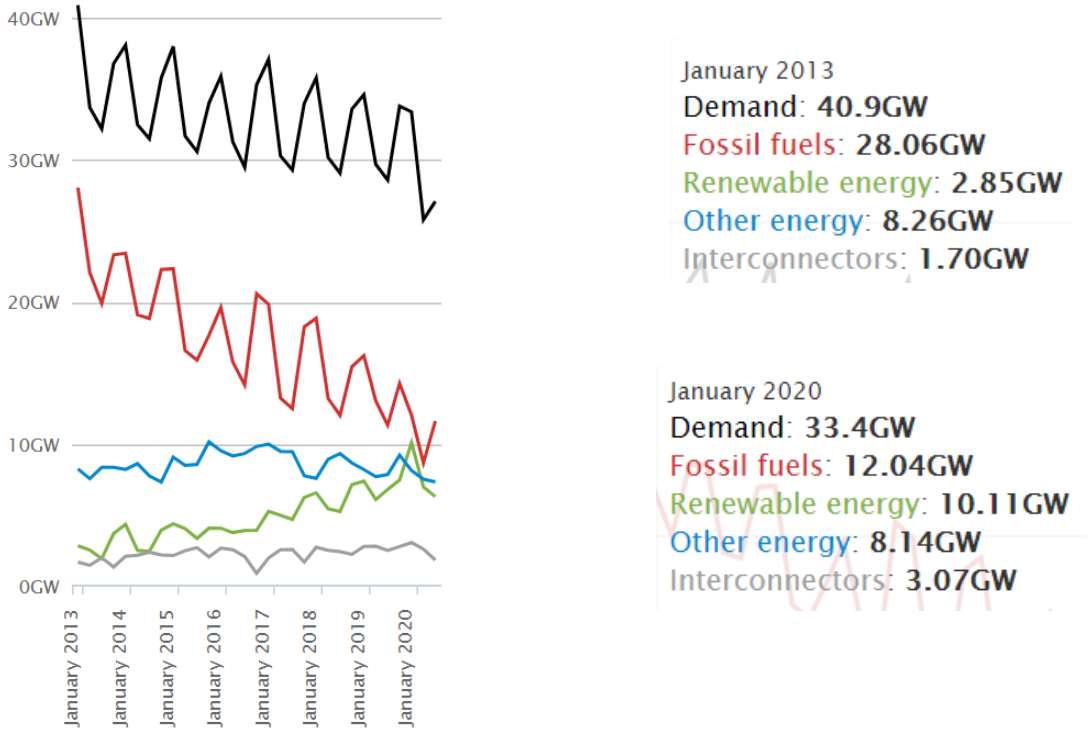


Source: BEIS, 2018

Electricity

Emissions from electricity are falling rapidly (the light green line in Figure 10 above) as national energy policy pushes the UK's energy mix from fossil fuels to renewables (Figure 12) and the effects of more efficient appliances and local micro-generation reduce the overall demand for grid energy.

Figure 12 - UK energy mix from 2013 to 2020

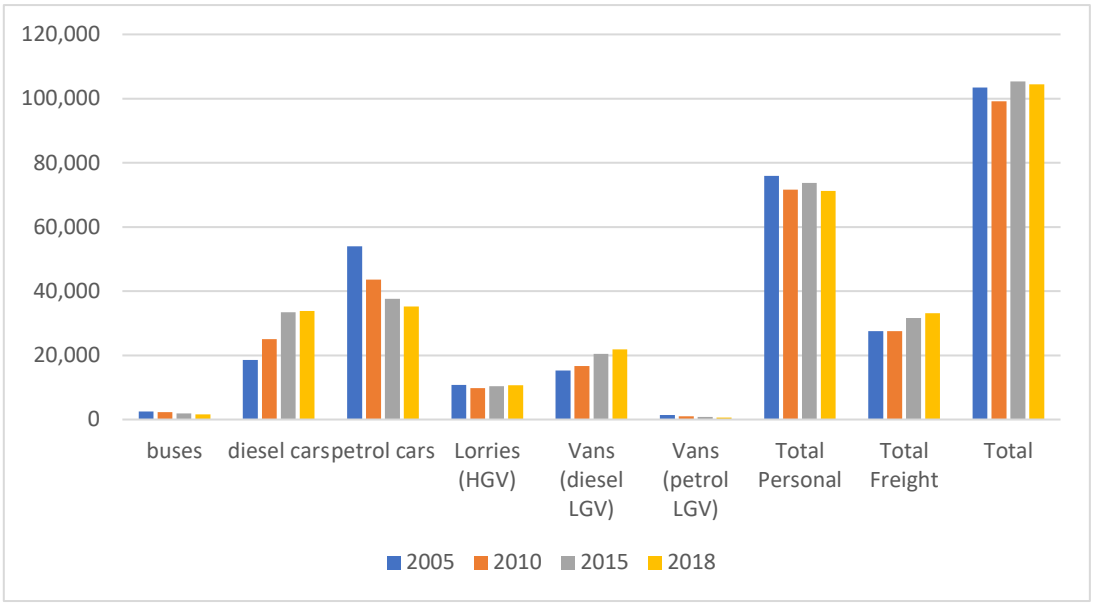


Source: National Grid Live Status, http://grid.iamkate.com/

Transport

Emissions from transport are the same as they were back in 2005, despite improvements in vehicle emission standards. A small decrease in emissions from personal car use has been offset by an increase in emissions from vans and lorries, perhaps reflecting the trend to online shopping.

Figure 13 - East Hants fossil fuel use for transport, 2005-2018 (tonnes oil eq)



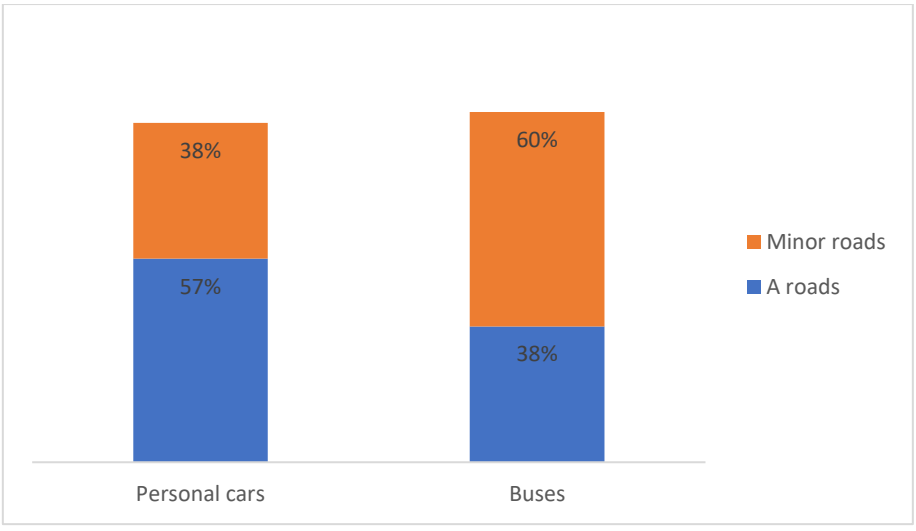
Source: BEIS Sub-national road transport fuel consumption 2005-2018

There has been a swing from petrol to diesel cars. Emissions from vans (diesel light good vehicles) have increased by more than 6% of the total and now emit more than twice as much as lorries (HGVs). Emissions from buses are very low by comparison and have fallen by a third.

Around two thirds (63%) of total East Hampshire traffic is on A roads and one third (32%) is on minor roads. Motorway traffic in East Hampshire is only 4%. The two busiest A roads in East Hampshire are the A31 (Guildford to Winchester) and the A3 (London to Portsmouth). The transport measured on those roads would include local as well as through-traffic.

For buses, the shares are the opposite; around one third (39%) of bus traffic is on A roads and two thirds (60%) is on minor roads. Could bus routes be more effective at replacing car journeys if they travelled more on A roads?

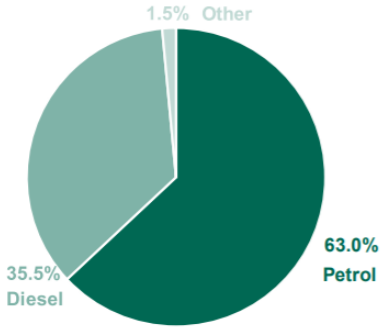
Figure 14 - Car and bus traffic by road type, East Hants, 2018



Source: BEIS, Sub-national road transport fuel consumption, 2005 - 2018

The National Travel Survey 2018 in England showed that around 63% of cars were petrol, and about 35% were diesel. Only 1.5% were another fuel type, such as plug-in hybrid or electric.[22]

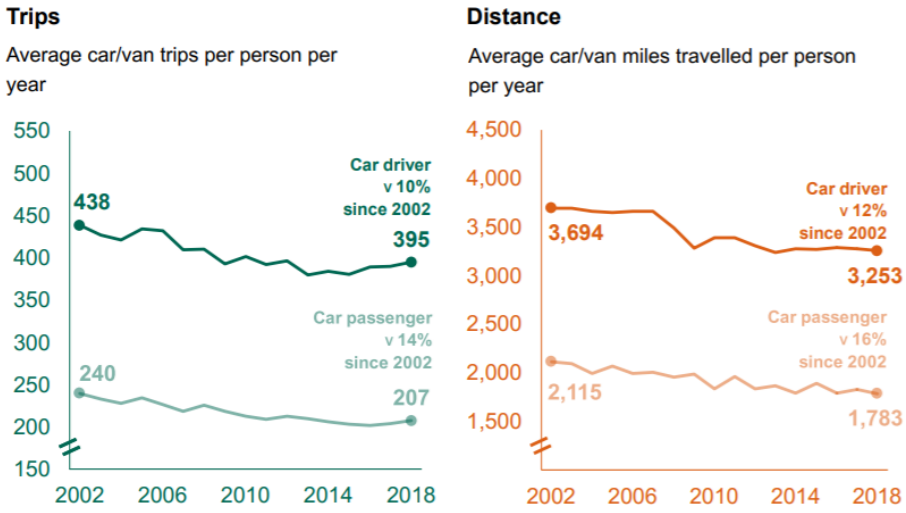
Figure 15 – Fuel type of cars in England



Source: NTS 2018

Nationally, while there has been a decrease in the number of car trips since 2002 of 11%, since 2015 there has been an upturn in the trend. From 2015 to 2018, car trips (either as a driver or a passenger) increased by 3%, even as distances fell.

Figure 16 – Trends in car/van trips and miles travelled (as driver or passenger)

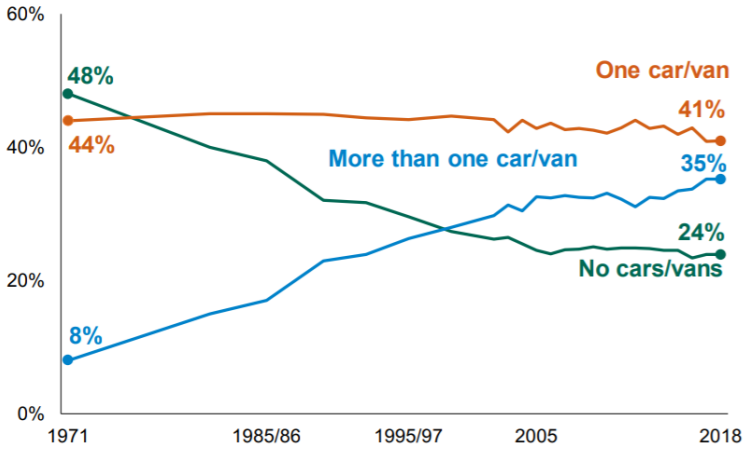


Source: NTS0303, 2018

This could be because people are not sharing cars as much as before. The number of car-free households stabilised at around 24% back in 2005 but the number of households with two or more cars has increased since then from about 30% to 35%. Over the same time, the proportion of car trips with passengers has fallen slightly from 55% to 52% as fewer car trips are shared.

[22] Now available for 2019 https://www.gov.uk/government/statistics/national-travel-survey-2019

Figure 17 – Percentage of households with access to a car, GB/England from 1989



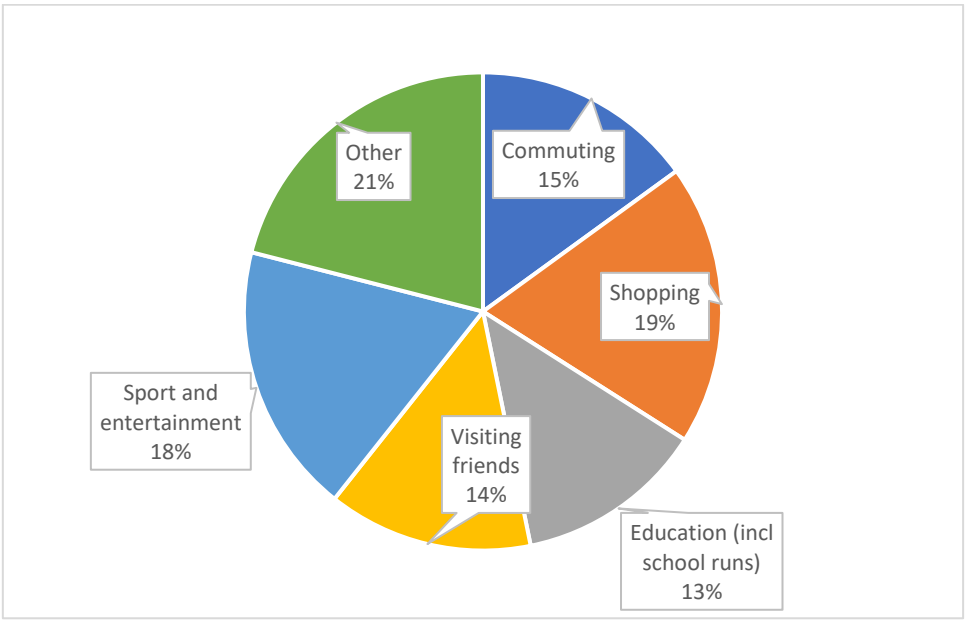
Source: NTS0205, 2018

Nationally, people drive their car on average once a day but are making an additional trip each month, compared with five years ago (380 car trips as driver per person per year in 2013, vs 395 in 2018).

Over the last five years, people have used local buses less (43 to 33 trips) and either walked more if it is under a mile (223 to 262 trips) or driven themselves instead (380 to 385 trips).

More than third of car trips in 2018 were for shopping and commuting (19% and 15%), both of which could be reduced significantly if the lockdown trends for working-from-home and home deliveries persist.

Figure 18 - Purpose of trips (all forms of transport, national, 2018)



Source: BEIS, Sub-national road transport fuel consumption, 2005 - 2018

Annex C: Framework for a Residents Action Plan on Climate Change

To help residents of Petersfield and surrounding areas identify actions that could reduce carbon emissions in our area, we have reviewed the action plans published by nine local authorities that have either comparable emissions levels to ours or similar environmental characteristics. We have selected some of the more interesting ideas from these plans and grouped them in categories. The list of ideas is not exhaustive and is meant as a tool to feed discussions about what might go into a local climate action plan, not as a plan itself.

The action plans we looked at were published by: **Somerset West and Taunton Council, Aylesbury Vale District Council, Hart District Council, Forest of Deane District Council, Basingstoke & Deane Borough Council, South Downs National Park Authority, Frome Town Council, South Hams District Council, and Bradford on Avon Town Council.**

The action ideas fall into nine categories, which could form the basis of working groups to develop the ideas further:

- Road transport
- Housing
- Commercial and industrial
- Agriculture
- Nature
- Energy
- Consumption
- Council estate and operations
- Communication and engagement

Note – the ideas could be grouped differently, for example Somerset West and Taunton Council used these categories: Built Environment, Energy, Farming and Food, Industry, Business and Supply Chain, Natural Environment, Transport, Waste and Resource Management, Water, Communications and Engagement.

ROAD TRANSPORT

Extend geography of local cycling and walking infrastructure plan (LCWIP)

Research barriers to active travel

Lower speed limits in town

Pedestrianize the high street and square

Preferential EV taxi licensing, revise taxi queuing system and install driver hut

Find a partner to set up a car-pooling service

Find a partner to set up bike hire and e-bike hire in town centre

Work with national partners on EV charge point strategy

Petersfield Climate Action Network (PeCAN)

Create a fund for people to install EV charge points

Install EV charge points in all council car parks

Work with SSE and others to install multiple EV charge points in station car park

Review bus services to maximise their car-replacement potential

Work with HCC on switching buses to EVs

Create a local bus users' info app

Investigate local bus-on-demand / group taxi service

Create a forum for local delivery companies to promote EV switchover and improve customer pooling

HOUSING

Retrofit plan for social housing provider (Radian), energy guidance notes for social housing residents

Review the draft Local Plan: add guidance on development location, transport planning, carbon reduction targets, energy efficiency, renewable energy generation and sustainability requirements

Embed highest energy standards in discretionary planning incentives, e.g. CIL

Strengthen enforcement of existing building standards with climate relevance, especially at large development sites

Awards scheme for low-carbon new developments

Require developments on council-owned land to be very low-carbon

Map local buildings and create retrofit strategies for groups of houses and communities

Encourage retrofits through planning and using Local Development Orders

Identify empty homes and buildings, bring them back into use to reduce new-build targets

Promote Sustainable Drainage Systems (SuDS) though planning guidance and information

Identify locations for heat networks

Partner with Parity Trust to provide low carbon retro-fit loans to households

Refrigerant leakage – run an information campaign, create a register of trusted fitters to dispose of fridges, air conditioners, heat pump refrigerants

COMMERCIAL AND INDUSTRIAL

Identify largest energy and water users and engage with them

Identify businesses with high physical and transition risk and engage with them

Identify internet 'not-spots' and flag to network providers

Petersfield Climate Action Network (PeCAN)

Develop a charge point strategy and microgrid plan for industrial estate tenants

Create tax incentives for green businesses: sustainability consultants, renewables installers etc

Find and promote emissions-monitoring tools for businesses

Provide low carbon management training to local SMEs

Business roundtable on reducing supply chain emissions

Awards scheme for low carbon business

AGRICULTURE (with SDNPA)

Research local farming practices to identify emission sources and best practices

Research green revenue diversification strategies for farmers and large land-owners

Identify climate-change resistant crops and livestock breeds

Develop a policy on soil quality and soil carbon sequestration

Appoint an agricultural specialist to apply SDNPA policies to non-SDNPA farmers

NATURE

Public 'call for sites' for tree planting and wildflower planting

Refocus 'pocket parks' on re-wilding, biodiversity, carbon sequestration

Map green corridors and identify gaps where land purchase or change of use could create wildlife links

Appoint a tree expert to oversee planting of 120k trees and create tree strategy

Create a "what tree, where" guide

Create new woodlands and urban tree planting

Verge cutting policy and review of contracts

Widen hedgerows

Pesticide and fertiliser policy

Engage local nurseries to provide saplings

Campaign for a fruit tree in every garden

Publish list of garden plants to improve biodiversity, resist droughts

ENERGY

Public information campaign on energy reduction and efficiency

Petersfield Climate Action Network (PeCAN)

Work with land agents to identify renewable energy sites

Run a public “call for sites” to identify renewable energy locations

Review draft Local Plan policies to increase renewable energy and storage installations

Work with SSE on strategy to flatten peak electricity demand

Engage water companies on energy use and explore microgrid potential

Review potential of investment portfolio to fund renewable energy and storage installations

CONSUMPTION

Public information campaigns focused on food and air travel

Identify new allotment sites

Review and upgrade public drinking fountains

Enable food waste collection

Create more TerraCycle points

Work with Macarthur Foundation to promote circular economy

Explore deposit return schemes and reverse vending

Support repair cafes

Improved shopfront for reusable items at the amenity tip

COUNCIL ESTATE AND OPERATIONS

Long-term plan to decarbonise council-owned leisure centres

Medium-term plan to electrify waste collection fleet

Audit the energy and water use of EHDC buildings and real estate assets

Survey the self-generation and retro-fit opportunities at EHDC buildings and real estate assets, incl heat pumps

Council vehicle fleet to EVs

Switch to renewable energy providers

Green procurement policy

Staff loans to buy EVs

Remote working policy for council staff and members with minimal meetings that need travel

Review the risk register for climate risks

Create a district climate adaptation plan

Petersfield Climate Action Network (PeCAN)

Internal communications campaign

Review food offering in leisure centres

COMMUNICATION AND ENGAGEMENT

Publish the district's carbon budget, baseline emissions and annual updates in the local newspaper

Research actions that other councils have done

Climate summit for the public

Engage Parish councils with a model action plan, funding info, and networking events

Direct grant funding to community climate and energy groups

Schools and colleges speaking programme

Dedicated climate page on council websites

Drop-in public events to discuss the action plan in a 'roadshow' of Parishes