How we travel

❖ What is ‘transport’?

There are many different types of transport. The first important distinction is between surface transport, air travel, sea travel and virtual travel.

- **Surface transport** is anything that travels on the land. This includes cars, vans and lorries used by individuals or businesses. It also includes public transport like buses, coaches and trains. And it includes ‘active transport’ – things like walking, cycling or scootering.

- **Air travel** is anything that flies.

- **Sea travel** is used here to mean anything that goes on water. This includes ferries and cruise liners, river crossings and the ships used to transport goods.

- **Virtual travel** means replacing the need to actually travel by things like online meetings, online banking or online shopping**.**

Another important distinction is between domestic travel and international travel.

- **Domestic travel** is travel within the borders of the UK.

- **International travel** means travel that starts in the UK but ends in another country (e.g. France). It does not include transport that we take within that other country when we get there.

People also make distinctions between:

- **Passenger (or personal) transport:** This is what people use to travel for pleasure and for almost all work. The exception to the latter is if people are also moving equipment (e.g. painters and decorators).

- **Freight:** This is transport used to move goods. It includes goods for everything, including farming, industry, shops and online shopping deliveries. It also includes transport used for services, for example the vans used by decorators, plumbers or to deliver the post.

Climate Assembly UK is focusing on passenger transport not freight. This includes all types of passenger transport (surface, air and sea, domestic and international). It also includes virtual travel.

❖ What proportion of UK greenhouse gas emissions come from the transport sector?

Our domestic and international travel is responsible for 33% of the UK’s greenhouse gas emissions. This makes the transport the largest single causes of emissions in the UK.

Passenger transport creates much more emissions than freight. Surface transport creates much more emissions than air or sea travel. The table below shows how this breaks down further.

Table 1: Transport sector emissions in the UK (2017)[1]

Transport type	Million Tonnes of Carbon Dioxide equivalent (MtCO2e)	Proportion of total UK transport emissions	Proportion of total UK emissions
Passenger vs Freight (road transport only)			
Passenger	73	44%	15%
Freight	40	24%	8%
Surface vs Air vs Sea[1]			
Surface	117	70%	23%
Air	37	22%	7%
Sea	14	8%	3%
Domestic vs International[1]			
Domestic air + sea	7	4%	1%
International air + sea	43	26%	9%

[1] Does not include military aircraft and shipping

❖ How does transport create greenhouse gas emissions?

Most greenhouse gas emissions from transport come from burning petrol, diesel and kerosene. We use these in our cars, lorries, ships, trains and planes. At the moment, almost all transport movements (96%) are fuelled by these fossil fuels.

Surface transport

For surface transport, it is cars that are responsible for the greatest share of emissions (please see the pie chart at the top of the next page). Facts that you may or may not know about car use in the UK include:

- 24% of households do not have a car or van[2];
- Those on the highest incomes use the car three times more than those on the lowest[2];
- Most cars are stationary for 98% of the time[3];
- Every day, one third of cars do not move;
- 62% of car trips are done with only the driver in the car[2];
- There are approximately 36 million empty car seats on the morning commute[4];
- The car is used for 61% of trips, but accounts for 77% of miles travelled[2].

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[1] BEIS (2019) Final UK greenhouse gas emissions national statistics 1990-2017.

[2] Department for Transport (2018) National Travel Survey for England 2017.

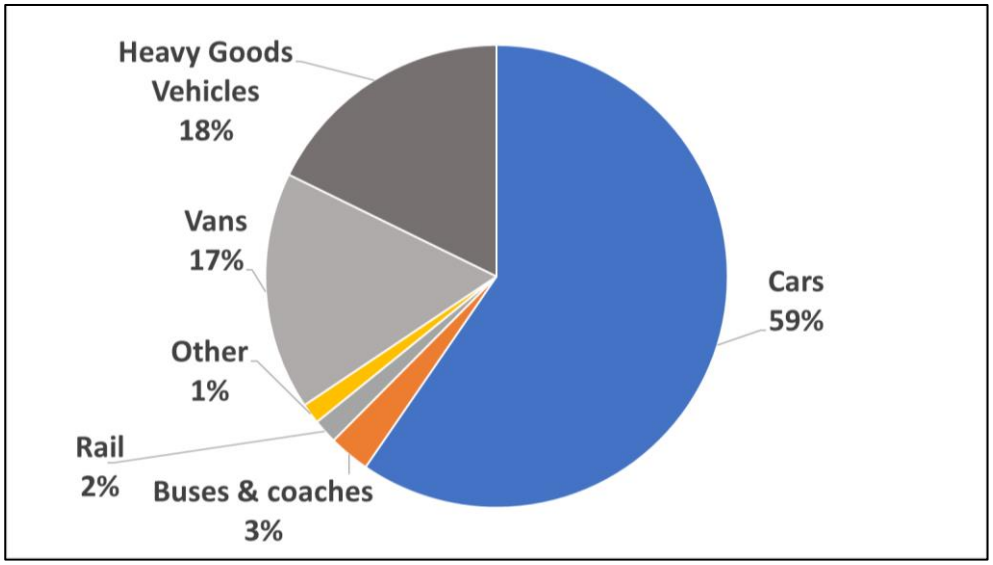
[3] Mattioli, G., Anable, J. and Goodwin, P. (2019) A week in the life of a car: a nuanced view of possible EV charging regimes. European Council for an Energy Efficient Economy (ECEEE) Summer Study 2019 Proceedings: 1105-1116. Hyères France, 02 Jun 2019 - 08 Jun 2019.

[4] Marsden, G., Anable, J., Bray, J., Seagriff, E. and Spurling, N. (2019) *Shared Mobility - where now, where next?* Second Report of the Commission on Travel Demand. Centre for Research into Energy Demand Solutions. Oxford, UK. ISBN: 978-1-913299-01-9

In terms of alternatives to cars:

- Just over a quarter of trips are on foot. But almost all are less than 1 mile2;
- Less than 2% of trips are by bike, compared to 26% in the Netherlands.
- At the moment, cycling only accounts for 1% of all distance travelled.
- Buses are used much more frequently and by a greater proportion of the population than railways. However, because rail journeys tend to be longer, they account for more distance than buses.

Figure 1: Proportion of Greenhouse Gases from each type of surface transport (2017)[1]



Air travel

For air travel, it is international flights that are responsible for the greatest share of emissions. Facts that you may or may not know about air travel and people in the UK include:

- In total, UK citizens fly abroad more often that people from any other country[5];
- The number of passengers travelling through UK airports has approximately tripled since 1990[6];
- 15% of people in Britain take 70% of the flights[7].
- About half of people in the UK do not fly in any one year[8];
- Most flights are done for leisure not business[9];
- A quarter of all international flights by UK residents are to Spain[10];
- Freight/mail is estimated to account for about 13% of emissions from UK aviation[11], and private jets account for around 1%[12].

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[5] International Air Transport Association World Air Transport Statistics 2019. https://www.independent.co.uk/travel/news-and-advice/british-travellers-iata-world-air-transport-statistics-a9029366.html

[6] Data taken from CAA annual statistics for all UK reporting airports (tables 10.3).

[7] 2014 British Social Attitudes Survey, analysed by afreeride.org, http://afreeride.org/about/

[8] UK Aviation Consumer Survey, with similar figures from the National Travel Survey and British Social Attitudes Survey

[9] Department for Transport air passenger forecasts 2017, 2016 baseline data

[10] ONS International Passenger Survey data on the destinations of overseas trips by air by UK residents, 2017, all purposes.

What's not included
Some things that you might think count as emissions from transport actually don't. These include the emissions produced when:

- Making petrol and diesel from crude oil;
- Making transport vehicles (e.g. making cars);
- Building transport infrastructure (e.g. building roads and railways).

All these activities produce greenhouse gas emissions. It is just that these emissions are seen as 'industry sector' or 'energy sector' emissions not 'transport sector' emissions when emissions are counted.

For air travel, the impacts on the climate are larger than the impact of just the carbon dioxide emissions. For example, planes can affect cloud formation. However, even though these additional impacts are important, they are difficult to measure and so are not included in the emissions figures that you generally see reported.

Air pollution
The emissions that contribute to climate change are mostly not the same emissions that contribute to local air pollution. Local air pollution is caused by a different set of emissions (nitrogen oxides, particulate matter and hydrocarbons). These emissions are not the focus of Climate Assembly UK. However, transport is the main source of these pollutants too as they are partly caused by burning petrol, diesel and kerosene, as well as coming from the tyres and brakes of cars, vans, lorries and buses. This means that many of the things we can do to reduce greenhouse gas emissions from transport will also improve local air quality.

❖ Have greenhouse gas emissions from transport been going up or down?

The UK's total greenhouse gas emissions fell by 40% from 1990 to 2018[1]. However emissions from transport are going up in absolute terms and as a proportion of total UK emissions. This is true of both surface transport and air travel. Emissions from sea travel have been going down.[13]

❖ What needs to change to get to net zero greenhouse gas emissions?

There are many different ways in which the UK could reduce greenhouse gas emissions from transport[14]. These include three types of measures:

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[11] BEIS (2019) 2019 Government Greenhouse Gas Conversion Factors For Company Reporting Methodology Paper for Emission Factors Final Report suggest that, on passenger aircraft, the proportion of emissions that should be allocated to passengers is 99.8% for domestic flights, 97.3% for short haul flights and 85.1% for long haul flights. Applying these proportions to figures in the DfT 2017 forecasts gives an estimate of emissions from freight carried on passenger aircraft, which has then been combined with the figures given there for freighter aircraft and aviation overall.
[12] Beever J (2019) Jet, set, go. Technical report. – estimate for 'business aviation' which is considered to be relatively synonymous with 'private jets'.
[13] Source: Committee on Climate Change 2019 Progress Report to Parliament.
[14] Anable, J. & Goodwin, P. (2019) Transport and Mobility. Chapter 4 in: Eyre, N. and Killip, G. Shifting the Focus: energy demand in a net-zero carbon UK. Centre for Research into Energy Demand Solutions. Oxford, UK. ISBN: 978-1-913299-00-2

1. **Avoid:** These are ideas that aim to stop us travelling so far in the first place. They include measures like:

    - Putting services like post offices, local shops and health centres back into local areas, particularly rural areas;
    - Encouraging people to use the services like local shops, banks, dentists that are nearest to them;
    - Using videoconferencing and teleconferencing, rather than travelling to meetings;
    - Travelling less far for leisure activities – such as taking more holidays in the UK rather than abroad;
    - Planning our cities, towns and villages differently so that they are near local shops and schools or have them built-in (as well as public transport) as standard.

2. **Shift:** These are ideas that ask us to move away from using the types of transport that create the most greenhouse gas emissions, and use other forms of transport instead. Measures in this area could include:

    - Making public transport cheaper or free for some or all age groups. There could also be simpler ticketing systems;
    - Making public transport services better (e.g. services could run more frequently or connect up better). This could be done by investing money and/or by creating regulations that specify minimum standards for services. It could include creating 'mobility hubs' where many forms of transport are available and interchange;
    - Changing public transport to include more flexible 'on demand' services such as mini-bus shuttle buses which are called through an app or a phone and drop off at key points in the network;
    - Investing in cycle lanes and pedestrianised areas, shared bikes and electric bikes;
    - Making driving cars more expensive. This could include charging drivers to use roads and/or for parking;
    - Closing some roads to cars such as in the centre of cities or not building any more roads;
    - Making flying more expensive by increasing the taxes you pay to fly. This could be done to affect everyone or just those who fly most often;
    - Limiting airport expansion, so that the total number of flights stays below a certain level;
    - Campaigns to inform and encourage people to use transport options that create less emissions.

3. **Improve:** These are ideas that aim to reduce the emissions created by the types of vehicles we already use. Measures in this area could include:

    - Sharing cars and rides;
    - Lowering and enforcing speed limits. This would reduce greenhouse gas emissions because any car uses around 10-15% less energy and fuel at 60mph than it is at 70mph;
    - Switching to vehicles that are powered by low carbon fuels (e.g biofuels, electricity and hydrogen) and more efficient vehicles, including electric vehicles. This could include banning the vehicles that produce most greenhouse gas emissions. Or it could involve using different types of financial incentives to get us to switch to cleaner vehicles;
    - Investing in electric buses and the electrification of the railway, so that both would run on electricity not on diesel;

- Investing in more efficient aeroplane engines and aeroplanes powered by low carbon fuels, such as hydrogen and electricity.

Climate Assembly UK will hear that not all the above ideas are equal. For example, they would have different impacts on greenhouse gas emissions and some are not fully ready, or would only be options for some kinds of travel.

❖ What will assembly members consider?

Assembly members will consider two main questions:

- What should happen about transport to help get the UK to net zero greenhouse gas emissions? This could involve thinking about what balance they want between ‘avoid’, ‘shift’ and ‘improve’.

- What policy measures should be used to make change happen?

Their answers to these questions will be a key part of Climate Assembly UK’s recommendations.