Is your lifestyle helping or hindering system change?

Stuart Parkinson and **Emily Heath**, SGR, outline the role of behaviour change in tackling climate change – including SGR's new '10 targets for 1.5°C-compatible living'.

In order to rapidly reduce greenhouse gas (GHG) emissions – and hence prevent the worst effects of climate change – we need major changes in economic and political systems, technologies, and individual behaviours.

Government and industry strategies focus mainly on technological change, but such an approach has so far failed to reduce global GHG emissions at all[1] and there seems little prospect that this will be enough to keep close to the 1.5°C target in the Paris Agreement, not least as emissions need to fall by 43% this decade (and even more subsequently) just to give us a 50:50 chance of hitting the temperature goal.[2] Indeed, many of the technologies currently championed are either at a very early stage of development – such as synthetic fuels – or deployment – such as carbon capture and storage – or have other serious obstacles to use at the required scale – such as nuclear power and biofuels.

Many campaign groups – including Scientists for Global Responsibility – continue to argue for major economic and political initiatives to be a key element of climate policies – e.g. a fossil fuel treaty and a Green New Deal – but there continues to be considerable political and industrial resistance to these, as the UK government's current lack of interest shows.

The area that has arguably received the least attention is behaviour change. Governments are generally reluctant to encourage anything beyond minor action for fear of a voter backlash, while campaigners fear that focusing on individuals lets government and industry off the hook. But could doing more to empower behaviour change – especially by influential individuals such as scientists and engineers – work in tandem with campaigns for more system change? After all, system change will still require marked behaviour change. For example, the Climate Change Committee has estimated that 62% of emissions reduction involves some form of behaviour change.[3] And, as we discuss later, some behaviours are so high carbon that they cannot easily be accommodated in a 1.5°C-compatible society, whatever its economic and social structure. Furthermore, if behaviour change can be encouraged among the higher emitting sections of society – which again includes most scientists – this would have a disproportionately large, positive effect on emissions reduction.

It is this thinking that has led SGR to put together a set of 10 evidence-based targets for '1.5°C-compatible living' – aimed initially at scientists, but also at anyone who wants to increase action towards a sustainable world. These targets are summarised below, and we encourage you to sign up for as many as you can at: www.sgr.org.uk/projects/living-targets

Deriving the 10 behaviour change targets

The Hot or Cool Institute (HoCI) estimates that the current average 'lifestyle carbon footprint' in the UK is 8.5 tonnes of carbon dioxide equivalent (tCO2e) per person per year[4] - see Figure 1a. This needs to be rapidly reduced to no more than 2.5 tCO_2e within this decade, with continued reductions thereafter towards net zero emissions. The 2.5 tCO_2e figure is based on a global carbon budget that would have a 50% chance of keeping global heating below 1.5°C, divided by the global population according to principles of fairness and sufficiency.[5]

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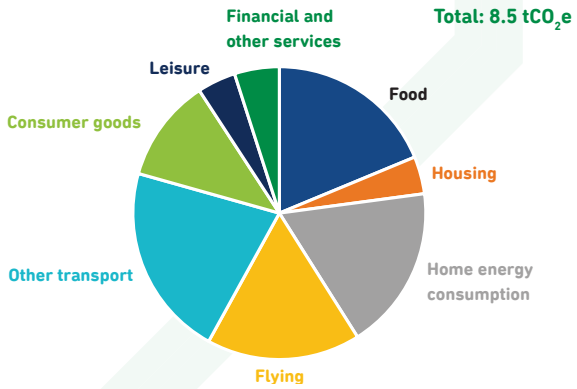
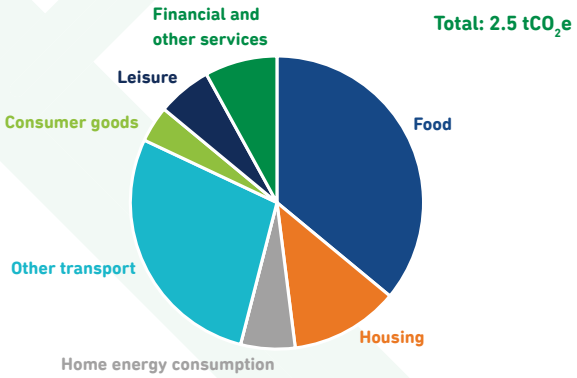
SGR has translated the 2.5 tCO_2e annual budget into 10 targets for individual action in key lifestyle areas as detailed below and illustrated in Figure 1b. This is the first time (to our knowledge) that such targets have been defined.[6]

Figure 1. Charts broken down into the same categories by meeting SGR's 1.5°C Living Targets

(a) Current 'lifestyle carbon footprint' in the UK



(b) Lifestyle carbon footprint needed before 2030



In addition to the 8.5 tCO_2e, the remaining fraction of your carbon footprint – about 3.3 tCO_2e per person per year in the UK – comes from your share of national services and infrastructure such as hospitals and the military, which you can influence (less directly) through voting and campaigning.

You may also have a large carbon footprint associated with your job – e.g. flying to business meetings or academic conferences. Although the targets below exclude work-related emissions, we encourage you to reduce those as much as possible too.

What are the 10 targets?

A brief summary of each target is given here, along with a breakdown of its associated average emissions per person per year in the UK. You can find on the webpages mentioned earlier more details including references, assumptions behind our calculations, co-benefits of meeting the targets, policy changes that are needed, and a long list of low-carbon activities for a high-quality life.

Many people already meet some of the targets or will find meeting them relatively straightforward. Others will find some of the targets a stretch – if not impossible – depending on individual circumstances such as living in an area with limited public transport, having family abroad, living in rented accommodation, or health or wealth limitations. However, everyone can do something!

1. Zero flying, especially in jet aircraft

0.0 tCO_2e/y

Flying is currently responsible for such a high level of carbon emissions (per passenger) that it is extremely difficult to accommodate even one trip a year on a jet airliner within a 2.5 tCO_2e/y lifestyle.

2. Sustainable levels of travel by land and sea

0.7 tCO_2e/y

This comprises a package of travel options equivalent to:

- Zero car ownership.
- Up to 5,000 km long-distance train travel. This is roughly equivalent to four return trips between London and Glasgow.
- Up to 5,000 km bus and short-distance train travel. This is roughly equivalent to a daily commute of up to 10 km each way.
- Up to 950 km car travel (e.g. taxi, car club, lift-share), on average shared with one other person. This is roughly equivalent to two local journeys per week in a typical petrol car.
- Walking or cycling for most short journeys.
- Limited ferry travel.
- Zero or minimal travel on very high emission vehicles/vessels (e.g. cruise ships, speed boats, steam trains, helicopters).

It is possible to meet this overall target by owning a small petrol car with low annual mileage – but only if you don't also clock up many miles by public transport. Sharing a small and/or electric car with others would reduce emissions further. Because of the embodied carbon in car manufacture, buying second-hand is generally much better than new.

3. Sustainably-sourced food and drink

0.9 tCO_2e/y

This involves very low consumption of high-carbon foods (e.g. animal-based, air-freighted, grown in a heated greenhouse, contribute to deforestation). Food waste should also be minimised. Eating seasonal vegetables and fruit helps significantly.

4. Home energy consumption of up to 3,500 kWh per person

0.9 tCO_2e/y (but see target 5)

Current average home energy consumption in the UK – for heating, hot water, lighting and electrical appliances – is estimated to be about 7,000 kWh per person per year. This can be reduced by, for example, improving insulation, increasing occupancy levels, using heating more efficiently (e.g. 'heat the person, not the space'), and using energy efficient light-bulbs and appliances.

5. Home energy supply from renewable sources

0.15 tCO_2e/y (but see below)

Meeting this target would, on average in the UK, reduce the emissions of energy use in target 4 from 0.9 tCO_2e/y to 0.15 tCO_2e/y, once lifecycle emissions have been accounted for.

Depending on personal circumstances, it will involve some combination of grid energy supply (electricity and/or gas) from a 100% renewable energy supplier, and/or electricity and/or heat supplied from local renewable sources, e.g. your own solar photovoltaic panels together with a heat pump.

6. Home floor space of up to 33 m^2 per person

0.3 tCO_2e/y

Divide the area of your home by the number of people who live there, excluding home office spaces (if this enables an employer to reduce office space elsewhere). This target accounts for the carbon emissions of house-building and maintenance, and can be met by avoiding non-essential refurbishment (e.g. kitchen/ bathroom refitting), increasing occupancy levels, or downsizing next time you move.

7. Possessions and sustainable consumption

0.1 tCO_2e/y

This involves low overall consumption of bought goods, with the majority bought second-hand/ reconditioned. New electronic equipment is expected to be used for at least seven years and furniture for at least 15 years. Clothes and shoes should also last several years, though this obviously depends on their quality and frequency of wearing.

8. Zero large pets (e.g. horses), or cats/dogs on a meat-based diet

0.0 tCO_2e/y

This would avoid 0.8 tCO_2e/y for an average dog and 0.3 tCO_2e/y caused by an average cat.[7] Obviously, we are not recommending that anybody gives away or abandons their existing pet(s), but the carbon impact should be considered before obtaining any new pets.

9. Low-carbon finance

0.2 tCO_2e/y

This involves investing all savings, pensions etc in fossil-fuel-industry-free funds with low-carbon finance companies.

10. Sustainable holidays

0.15 tCO_2e/y

Up to seven weeks' holiday accommodation in self-catering/ eco-friendly hotels per year.

One final point...

Arguably the decision with the largest climate impact is whether to have a child. Prof Mike Berners-Lee estimates[8] that having one child leads to additional greenhouse gas emissions of at least 210 tCO_2e over their (low-carbon) lifetime. With a high-carbon lifestyle, their lifetime emissions could exceed 5,000 tCO_2e – and even more if they have children too. Voluntarily limiting your family size – e.g. to one child – is therefore worth considering if you haven't already had a bigger family.

References

1 Our World in Data (2022) https://ourworldindata.org/co2-and-greenhouse-gas-emissions

2 IPCC Working Group III (2022) https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/

3 CCC (2019) P.155. https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/

4 HoCI (2021) https://hotorcool.org/1-5-degree-lifestyles-report/

5 As note 3.

6 More commonly, behaviour change is defined in terms of 'actions' – but, without a clear target, it can be difficult to know whether an action has been completed successfully.

7 Berners-Lee, M. (2020) *How bad are bananas?* (2nd edition). Profile books.

8 As note 6.