ACHIEVING LOW-CARBON AND EQUITABLE LIFESTYLE CHANGE

This briefing is intended as a resource for policy-makers and practitioners interested in how to enable and communicate about lifestyle change for emissions reduction.

KEY POINTS

• Lifestyle change is essential to achieve deep and near-term cuts in emissions in line with international obligations on climate change.

• Emissions from people's lifestyles are highly unequal both within and between countries; those on high incomes have carbon footprints many times larger than those on low incomes.

• Lifestyle change requires action at both the individual level, and changes at the systemic level: behaviour change and system change interact dynamically and are two sides of the same coin.

• Practical routes by which lifestyle change can be accomplished include economic measures and changes to the built environment, through social movements and civic activism, and decisions taken at the personal and household level.

Centre for **Climate Change** and **Social Transformations**

CAST is a global hub for understanding the role of people in shaping a positive low-carbon future. Based at Cardiff University, our additional core partners are University of Bath, University of East Anglia, University of Manchester, University of York and the charity Climate Outreach.

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Introduction

The causes of the climate crisis are intimately bound up with the ways we travel, how we power our homes, the food we eat, and the physical products we buy and use. Household consumption from these activities is estimated to comprise around two-thirds of all emissions[1]. In order to effectively tackle the climate crisis, we will need to find ways to live differently – and fast.

There are long-standing debates about where responsibility lies for dealing with household emissions[2]: does this belong to individuals, whose ways of life ultimately drive climate change; or to governments and industry, who set the conditions that shape and constrain our lifestyles?

In truth, action can and must occur at all scales, from a community group lobbying for a new cycle path, to the wrangling and compromise of international climate negotiations. No one is an island: action by individuals to reduce emissions has been shown to influence other people around them, which helps shift ideas of what is normal and expected, which can in turn change the very contexts in which choices are made[3]. It is critical that politicians and policy-makers take ambitious steps to enable citizens to live in a low-carbon way, but they are unlikely to do so unless they sense wider public support and agitation for change[4]. Achieving low-carbon lifestyles and societies is everybody's business.

Background to the briefing paper

This briefing paper draws on work carried out for the United Nations Environment Programme (UNEP) Emissions Gap Report 2020[5]. Authors from the CAST Centre, Climate Outreach, and Oxford University's Smith School of Enterprise and the Environment, together with contributing authors from a wide range of other organisations and universities, produced chapter 6 of the report, 'Bridging the gap – the role of equitable low-carbon lifestyles'.

This chapter of the report synthesised recent evidence on inequalities of emissions, and the potential for climate mitigation through changing lifestyles in relation to food, transport and residential energy consumption. The chapter also looked in detail at examples of good practice around the world, the mechanisms by which lifestyle change can be achieved, how to align lifestyle change with a green recovery from COVID-19, considerations for communication, and the vested interests that could impede routes to large-scale lifestyle change.

Carbon inequality and the scale of change needed

While the majority of greenhouse gas emissions can be linked to household activities, this does not mean that all individuals have similar footprints, or equal capacity to act.

1. Ivanova et al. (2016); Hertwich and Peters (2009).
2. Akenji (2014); Maniates (2001); Nielsen et al. (2020)
3. Amel et al. (2017)
4. Howarth et al. (2020)
5. https://www.unenvironment.org/emissions-gap-report-2020

The distribution of emissions in the form of individual or household carbon footprints is, in fact, extremely uneven[6,7]. Around half of all people alive today have a footprint that is already compatible with a 2030 target necessary to keep temperature rise to within 1.5C – although it must be said that this situation is inadequate for many, in terms of being able to secure a decent standard of living.By contrast, the richest 1% of people have footprints that are at least 30 times a reasonable threshold for personal carbon emissions for the year 2030[6]. This is not just a division between the richest and poorest countries. The world's richest 1% and 10% live in all continents. Even within the EU, the top 1% of households by income have carbon footprints that are, on average, more than ten times the size of those in the lowest-earning 50%[7].

This disparity in income and emissions is particularly pronounced in certain areas of people's lifestyles. For example, a person in the top 1% of EU emitters has a total carbon footprint of around 55 tonnes CO2/year; of this, air travel comprises more than a third, at around 23 tonnes CO2. By contrast, someone in a middle income bracket in the EU has an average footprint of around 10 tonnes/year, of which air travel comprises only 0.1 tonnes: only around a hundredth of their total. This is represented in Figure 1 below (areas of circles to scale)[7].

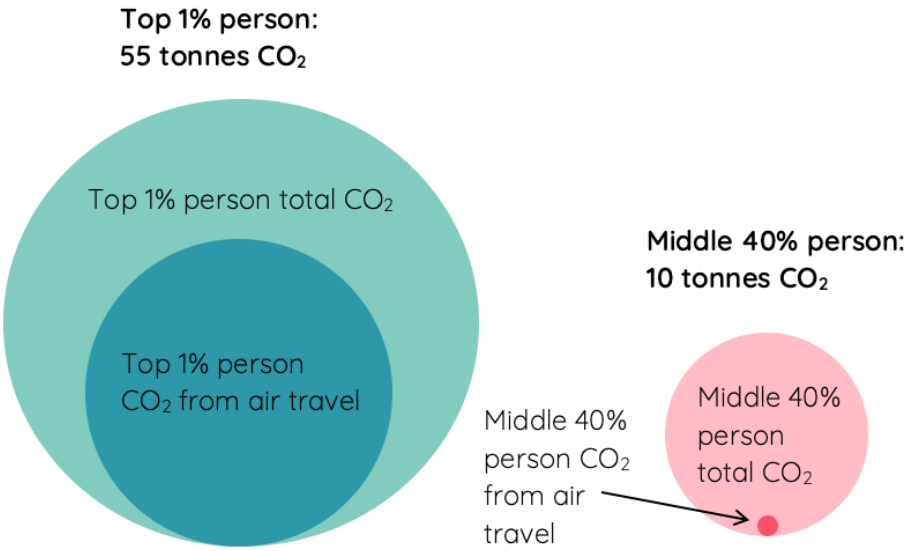

Figure 1: Typical characteristics of a top-earning vs middle-earning person in Europe

These substantial differences in both the size of absolute emissions by income group, and the relative share by income group of different activities, are important to recognise in order to achieve lifestyle change that is both fair and effective. A stable climate is compatible with improved well-being and a better quality of life for communities and nations alike, but it will require a move away from the energy-intensive lifestyles that are especially prevalent among wealthier sections of society[8].

Identifying opportunities for emissions reduction

Emissions arising from individuals' lifestyles and household activities span many sectors, but foremost among these are transport, food, and residential energy consumption[9].

6. Oxfam and Stockholm Environment Institute (SEI) (2020)
7. Ivanova and Wood (2020); source data used in Figure 1 derived from this paper.
8. Oswald et al. (2020)
9. van den Berg et al. (2019)

In some cases, the avoidance of certain activities can enable emissions reduction; at other times, a shift towards lower-carbon alternatives may be more appropriate, or there may be the opportunity to improve the carbon efficiency of an activity or service[10] . For the transport sector, substantial reductions can be achieved through reducing and avoiding the use of private cars, as well as by shifting to active travel and/or electric vehicles.

With respect to food, avoiding waste and shifting to lower-carbon diets has the potential to reduce emissions, in the latter case particularly through a move towards vegetarian or plant-based diets, as well as local sourcing of food. Measures taken in the home can have a major impact in terms of cutting carbon emissions, especially where these involve long-lasting courses of action such as installing insulation and the use of electricity from renewable sources. Examples of the potential emissions reduction from lifestyle change are shown in Table 1[11] .

Sector and examples	Median emissions reduction potential (per person per year, min – max)
Transport	
Avoiding one long-haul return flight	1.9 tCO2e (0.7 – 4.5)
Shift to active travel (e.g. walking, cycling)	0.8 tCO2e (0 – 2.8)
Replace petrol/diesel car with electric vehicle	2.0 tCO2e (-1.9 – 5.4)
Food	
Sufficiency (eating only what is needed, reducing waste)	0.3 tCO2e (0 – 1.3)
Shift to vegetarian diet	0.5 tCO2e (0 – 1.5)
More regional/local food	0.5 tCO2e (0 – 1.1)
Residential	
Use of domestic renewable electricity	1.5 tCO2e (0.3 – 2.5)
Refurbishment and renovation	0.9 tCO2e (0 – 1.9)
Home heating using heat pumps	0.9 tCO2e (0 – 1.8)

Practical approaches for achieving lifestyle change: how can this be achieved?

In order to bring about low-carbon, equitable lifestyles, there are circumstances where citizens can take the initiative – including through the sorts of measures described above such as dietary change. However, low-carbon lifestyles cannot be achieved solely through action by individuals: there is a need for major changes to the physical environments in which we live (such as whether there are opportunities to walk or cycle to work), to cultural and social norms (for example, developing new ideas about what we consider to be appealing foods), and policies that provide the framework for the decisions we make (for example, the availability of financial support for installing insulation or solar panels at home).

10. Ivanova et al. (2020)
11. Figures in Table 1 are based on analysis in Ivanova et al. (2020)'s meta-review of 53 studies spanning North America, Europe, Asia, Australia and New Zealand. The majority of studies had European or North American focus, and there is some variation by region; median emissions reduction potential per person reflects the status of this literature. For more detail on the searches, procedures and inclusion criteria, see Ivanova et al. (2020).

There are a diverse range of approaches that can lead, ultimately, to lower-carbon lifestyles. In many cases, these have been implemented successfully in places around the world. In the transport sector, positive examples of steps that are aligned with low-carbon lifestyles include limiting or rejecting airport expansion (as has happened recently in the UK with Bristol airport and Heathrow's third runway)[12]; replacing domestic short-haul flights with rail[13] ; and incentives and infrastructure to enable cycling and car-sharing[14].

In some cities in China, restrictions on the use of petrol cars, combined with incentives and subsidies for the purchase and use of electric vehicles, have led to greater uptake and diffusion of low-carbon vehicles[15] . Citizen activism and advocacy has played a key role in enabling the growth of cycling in both Latin America and Northern Europe[16] and in pushing for improved access for non-motorised vehicles in Kolkata, India[17] . There have been growing calls for constraints on the advertising of large, inefficient cars[18] , as well as for health warnings on fuel pumps[19].

In the residential sector, households can be encouraged to improve the energy efficiency of housing through subsidies and financial incentives[20] . There are also well-documented opportunities to increase the uptake of renewable energy in households, by making this the default option from grid providers: research in both the USA and Germany has found that automatically assigning new customers to green energy from the grid – which they are under no obligation to retain – results in a far greater level of their use[21] . As well as enabling individual households to take steps to reduce emissions, small-scale technologies such as heat pumps and solar panels have the potential to diffuse rapidly through society if they are linked to wider social benefits such as job creation and accessibility to low-income households[22]. For example, measures taken to support industry and to accelerate consumer demand for LED lighting in the home has led to major energy savings across India[23].

Changing our diets has substantial potential both to lower emissions and promote good health, in particular by reducing consumption of red meat and dairy products[24]. Adopting a pescatarian diet (vegetarian plus fish) is estimated to provide a reduction in emissions linked to food of around 27%[24]. Supermarkets could play a major role in shifting diets to be more sustainable: the 10 largest supermarket chains alone are responsible for around a third of food sales around the world[25], and have the ability to influence consumer practices such as by promoting and ensuring the availability of alternatives to meat protein[26]. In France and Italy, national policies have been implemented against food waste in supermarkets, including legislation to ban destruction of edible food[27]. Opportunities exist for the public sector to be more assertive in the provision of healthy, local, low-carbon food: for example, following its declaration of a climate emergency, the city of Leeds, UK, has set out its intention to introduce non-meat and vegetarian days, through its catering to 182 primary schools under its remit[28].

12. *Mitchell (2020); note that at the time of writing, both cases remained subject to ongoing appeals.*
13. *Railway Gazette (2020)*
14. *Cervero et al. (2009); Pucher and Buehler (2008)*
15. *Li et al. (2019)*
16. *Rosas-Satizábal and Rodriguez-Valencia (2019); Carstensen et al. (2015)*
17. *Roy (2015). See also https://www.economist.com/asia/2013/10/03/four-wheels-good-two-wheels-bad*
18. *Beevor et al. (2020)*
19. *Gill et al. (2020)*
20. *Climate Action Tracker (2020)*
21. *Kaiser et al. (2020); Kennedy and Rosen (2020)*
22. *Wilson et al. (2020)*
23. *Kamat et al. (2020)*
24. *Aleksandrowicz et al. (2016)*
25. *IPES-Food (2017)*
26. *Gravely and Fraser (2018)*
27. *Mourad (2016)*
28. *Leeds City Council (2020)*

There is also evidence to suggest that households can reduce their emissions by growing their own food[29]; at the city scale, urban agriculture zones such as those being developed in Quezon City, Philippines, can help to localise food production while serving vulnerable communities[30].

Citizen engagement in low-carbon lifestyles

Many previous attempts to encourage people to change their behaviour to help mitigate climate change have faltered. Behaviour change approaches have been justifiably criticised for 'scapegoating' individuals or for individualising an issue which is properly thought of as having many structural constraints and influences[31].

A more nuanced view of the role of individuals in enabling wider change is needed – one which recognises the limitations on households, but which also opens up possibilities for more active participation in making a difference on climate change[32].

This requires thinking of people not as isolated 'consumers' but as citizens with a part to play in achieving societal change through their roles as members of communities and through their relationships with others[32,33]. This type of agency incorporates both personal and collective features; and can occur in everyday settings (such as food purchasing) as well as strategic and political settings (such as through social movements).

In many cases, people acting ostensibly as individuals, have helped to catalyse wider social change. For instance, there are well-known neighbourhood effects, whereby the prevalence of household solar panels in a residential area leads to other houses following suit and also purchasing panels[34] . Such processes of 'social contagion' have also been observed in the take-up of electric cars[35] , plant-based diets[36], and purchase of energy-efficient products[37] . This process can lead over time to a change in what are seen as ordinary or desirable choices – further reinforcing behaviour change. Social and cultural norms are generally slow to change, but once they are established they can help to lock in new lifestyle[38]. A further social reason for making changes at the personal and household level, is that there may be unexpected 'tipping points', at which a large enough minority of people doing things differently is able to bring about rapid cultural change[39] .

Ultimately, there is an important (and often overlooked) interplay between the actions of individuals, and the systems and contexts within which they live. Personal action can help reduce emissions, as well as helping to shaping the conditions for further action; in turn, it is necessary for policy and industry to implement the conditions under which low-carbon lifestyles can flourish, as shown in Figure 2[40] .

29. *Vávra et al. (2018)*
30. *C40 Cities Network (2020)*
31. *Akenji (2014); Maniates (2001)*
32. *Otto et al. (2020a); Nielsen et al. (2020)*
33. *Amel et al. (2017)*
34. *Graziano and Gillingham (2015); Richter (2013); Bollinger and Gillingham (2012)*
35. *Feygin and Pozdnoukhov (2018)*
36. *Cherry (2006)*
37. *Wolske et al. (2020)*
38. *De Young (2011)*
39. *Otto et al. (2020b)*
40. *Figure designed by Caren Weeks; UNEP Emissions Gap Report (2020)*

Figure 2: The dynamic interplay between personal, social and structural change

Lessons from COVID-19

COVID-19 has impacted everyday life around the world, disrupting many established routines, and bringing about the largest relative drop in carbon emissions since WWII[41]. Yet there is a risk that these changes will rebound as the COVID-19 crisis eases, and the path forward will depend strongly on recovery choices made by governments around the world . One of the key lessons for climate action from COVID-19 is not so much about the size or duration of the drop in emissions in 2020, but rather, about the insights gained into how rapidly lifestyle changes can happen.

The radical shifts we have witnessed during lockdowns show how deeply interconnected 'system change' and 'behaviour change' are. The risks to wider society from COVID-19 have to a large extent been limited by the actions of many individual households committing to socially distance, to wear masks, and to refrain from large gatherings – alongside measures taken by governments and support for those whose livelihoods have been disrupted by lockdowns. Without public support, along with shifts in social norms and a commitment to individual behaviour changes in service of addressing a collective risk, national-scale action by governments would not have been achievable.

Looking to the future, our response to COVID-19 has the potential to lead to a longer-lasting reduction in emissions through wide-reaching and sustained green recovery packages[43]. Governments around the world are preparing to invest to support jobs and economic activity, and have important choices to make. They can lead the way by creating conditions that make lifestyle changes possible, such as providing incentives and subsidies that encourage residential energy efficiency, or by implementing environmental conditions to bailouts for high-carbon industries.

Investments in infrastructure can support and maintain ongoing low-carbon choices, for instance, by transforming urban space to support active travel, improving public transport, and supporting the construction of new green infrastructure[44] .

41. Le Quéré et al. (2020)
42. See Chapter 4 of the UNEP Emissions Gap Report at https://www.unenvironment.org/emissions-gap-report-2020
43. Büchs et al. (2020)
44. C40 Cities Network (2020)

The lockdown period in many countries may be long enough to establish new, lasting routines if supported by longer-term measures. This needs to be in coordination with civil society who feel they can endorse these measures, and who feel supported in making low-carbon lifestyle choices[45]. As part of this, people from all walks of life have a role to play as decision makers at work, members of communities, and as citizens protesting or making their voices heard to their elected representatives. Individuals have many ways in which they can participate, and when this happens en masse there is the potential to bring about long-lasting and deep-rooted change.

Summary, conclusions and policy recommendations

Politicians and policy-makers have the opportunity – and an obligation – to take ambitious steps to enable citizens to live in low-carbon ways, particularly with respect to the high-emissions areas of transport, residential energy use, and food. This can and should be done in an equitable way. The biggest emissions reductions can be achieved by directing measures at the relatively small number of people with the largest footprints[46] – for instance, in relation to the large relative role of air travel in the footprints of the wealthiest individuals[6-8].
Attempts to bring about far-reaching lifestyle change will only work where there is public support, and a sense that measures taken to achieve this are fair[45]. A transition to low-carbon ways of life will require the active participation of individuals in changing their lifestyles, by reducing personal emissions, and by fostering societal change as consumers, citizens, and members of communities. There is a need to move beyond simplistic divisions between 'individual' and 'system' change; we should instead recognise and make use of the dynamic relationship between them.

45. Howarth et al. (2020)
46. BBC News, 9th December: Climate change: Global 'elite' will need to slash high-carbon lifestyles. https://www.bbc.co.uk/news/science-environment-55229725

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CAST is a global hub for understanding the role of people in shaping a positive low-carbon future.

We explore and communicate the tangible benefits of rapid climate action, asking how we can live in ways that are fairer, happier, and healthier while also radically cutting our carbon emissions. Based at Cardiff University, our additional core partners are University of Bath, University of East Anglia, University of Manchester, University of York and the charity Climate Outreach.

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