The Report

Cambridge Sustainability Commissions

Changing our ways?

Behaviour change and the climate crisis

The report of the Cambridge Sustainability Commission on Scaling Behaviour Change

University of Sussex

The Cambridge Sustainability Commission on Scaling Behaviour Change
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Disclaimer: The views expressed in this report are those of the authors and do not necessarily reflect those of the KR foundation which supported the work of the Cambridge Sustainability Commission on Scaling Behaviour Change.

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List of abbreviations

BAU	Business-as-usual
CDR	Carbon Dioxide Removal (technologies)
CSA	Community Supported Agriculture
DTC	Direct to Consumer
EEIOA	Environmentally Extended Input-Output Analysis
EFA	Ecological footprint analysis
EV	Electric Vehicles
GHG	Greenhouse Gas Emissions
IPCC	Intergovernmental Panel on Climate Change
LCA	Life Cycle Analysis
SBC	Sustainable Behaviour Change
SCC	Strong Sustainable Consumption
SCMOs	Sustainable Community Movement Organisations
SDGs	Sustainable Development Goals
SES	Socio-ecological systems
SUV	Sports Utility Vehicle
UNFCCC	United Nations Framework Convention on Climate Change
WSC	Weak Sustainable Consumption

Table of Contents

1. Introduction **7**

Background and Context 8

Influencing behaviour *12*

2. The scale of the Challenge **15**

One Planet Living 16

Defining parameters 16

Table 1: Defining fair shares for sustainability *18*

Social dimensions 19

Table 2: Sustainable consumption hotspots *21*

3. Understanding behaviour change **26**

'Nudge' theory 26

Psychological approaches 28

Sociology and social practice 32

Political economy 35

4. Leverage and tipping points **40**

Table 3: The chain of consumption *46*

Covid-19 as a tipping point? 48

5. Future intervention points **53**

i. One planet living: 'Strong' global sustainability 55

ii. Just transitions: Economic and social (climate) justice 56

iii. Rebalancing political systems 60

Table 4: Institutions for increasing accountability and deepening democracy *61*

iv. Driving social transformation 62

v. Focusing on behaviour hotspots 66

1

Introduction

Photo by Yann Arthus-Bertrand / Spectral Q

Behaviours change. That much we know. And if we were in any doubt about the speed with which they can change and the scale of their effects, the Covid-19 pandemic has served as a sharp reminder. But beyond such times of crisis, behaviours also change at key moments in our lives, when we have children, retire or move home. They are shaped by a range of family, community, regional and broader societal influences and physical infrastructures. But there is little consensus about how best to deliberately shape and directly influence everyday behaviours around transport, food and energy use in more sustainable directions and where *responsibility* and *agency* to effect that change lies.

This is particularly true of discussions about how best to *scale* behaviour change. Government policy, economic incentives and broader cultural change all have a role to play. But can they achieve the scale of change over short-term time frames within which 'transformative action' needs to take place to meet the goals of the Paris Agreement?

In climate and broader sustainability terms, some behaviours matter more than others. Carbon footprints are closely correlated with income levels, highlighting the need for targeted and differential strategies within and between societies. Tools, strategies, levers and entry points, to be effective, have to recognise important cultural differences, uneven capacity to affect and enact change and very different levels of responsibility. There are few one-size-fits-all solutions to delivering change at this scale across and between divided and unequal societies. Multi-pronged approaches are required.

This report of the *Cambridge Sustainability Commission on Scaling Sustainable Behaviour Change* draws on research syntheses about the potential contributions of behaviour change towards climate and sustainability goals to attain the goals of the Paris Agreement. The commission focused on the state of knowledge and empirical evidence of leverage points for societal transformations at national and regional scales. The report provides examples of past evidence and future options of major shifts in lifestyles and values, providing evidence, where possible, of leverage points for deep social transformations. In addition to a review of academic theory and evidence of how to achieve systemic behavioural change and social transformations at large scale, and in-depth interviews with 31 leading experts from a range of disciplines and regions, a collaborative review was undertaken with experienced practitioners from civil society to ensure that, as far as possible, the assessment is grounded in practice and can be used as a springboard for developing ambitious action.

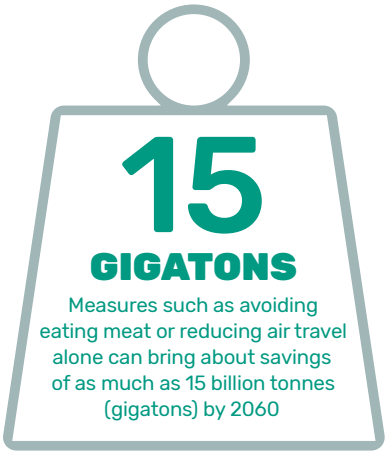
Background and Context

Robust evidence on the role of behavioural change in societal system transformations and empirical evidence of effective leverage points for societal change are needed to guide a range of actors, from philanthropy to policy and civil society, in their quest to identify high-impact and scalable initiatives for rapid changes towards sustainable human development. Yet clearly attributing agency responsibility is a fraught and controversial exercise and different parameters and benchmarks generate very different estimates about behaviours and the scope to change them.

72%

According to some estimates, households are responsible for 72% of global greenhouse gas emissions as a result of their consumption behaviour

One the one hand, for example, according to some estimates, households are responsible for 72% of global greenhouse gas emissions as a result of their consumption behaviour (Hertwich & Peters 2009). Ivanova et al. similarly show that around two-thirds of global GHG emissions are 'directly and indirectly' related to household consumption, where the global average is about 6 tCO_2eq/cap (2020:1). Research suggests that the opportunity for household carbon reductions could be substantial. An interdisciplinary study of 17 action types concluded that the implementation of the most successful behavioural programmes could reduce U.S. household carbon emissions by 20% by 2020, an amount equal to all of the emissions from France (Dietz et al., 2009), while Moll et al. (2005) estimate that 70 to 80% of national energy use in the United Kingdom relates to household activities. According to Cafaro, individuals can save huge amounts of carbon in what he calls a "behavioural mitigation wedge" (Cafaro, 2011, Dietz et al., 2009). This analysis suggests that measures such as avoiding eating meat or reducing air travel alone can bring about savings of as much as 15 billion tonnes by 2060 (Cafaro, 2011). Grubler et al., meanwhile, explore an alternative mitigation scenario which includes lifestyle changes, accelerated adoption of renewable energy, agricultural intensification, and lab grown meat (2018). These reduce overall energy demand by 40% from today's levels, which in turn reduces the burden on overall supply and makes it possible to reach the 1.5 °C target without relying on negative emissions technologies (Grubler et al., 2018). Van Vuuren et al. found that by combining lifestyle change, reduction of other greenhouse gases, and rapid electrification through renewable energy, it was possible to reduce, but not eliminate, the use of Carbon Dioxide Removal (CDR) technologies (2018).[1] From this perspective, individual behaviour undoubtedly drives both energy-intensive lifestyles and a large share of global carbon emissions, and is also a potential source of large, low-cost emissions reductions (Stern et al., 2016). This makes it a critical factor in achieving the 1.5 °C goal under the Paris Agreement.



Similar degrees of impact from consumption apply to the whole range of SDGs when we consider impacts on land, forests and marine environments of everyday patterns of consumption by wealthier citizens in particular. This is not just about climate change, therefore, and as we argue below, efforts to radically decarbonize through behaviour change need to be cognisant of their impact on other environmental problems such as biodiversity loss, waste, and water pollution, where a narrow focus on decarbonisation may obscure unintended consequences if a more holistic approach is not taken. This might be the case with regard to the electrification of transport (without considering the intensification of mining lithium and cobalt) and moves to plant-based diets (if pursued through monoculture industrial agriculture), for example.

1 Earlier studies on reducing footprints by factors of four or five also made the case that economically affordable, technologically viable solutions to get to 80% emissions reductions were already available twenty years ago (von Weizsäcker et al. 1997 & 2009).

Science in HD, UMass Crop Animal Research and Education Center in South Deerfield, MA.

Others are more critical about such estimates because they include the entire life-cycle of the consumption of goods and services from cradle to grave, and give consumers full responsibility for emissions, regardless of whether or not they are actually in a position to influence the supply chain of environmentally relevant resource consumption (e.g. in the production process). In sum, this allocates a much higher share of environmental impacts to households than they will be able to actively influence in reality.

Yet these estimates do inform climate action plans. A report by Williamson et al. (2018), building on the earlier 'Drawdown' plan,[2] identifies and ranks 30 (of the original 80) 'Drawdown recommendations' that are dependent upon behaviour changes at the individual level. They categorize the recommendations into four domains: food, agriculture and land management, transportation, and energy and materials. The top recommendations include: (1) reducing food waste, (2) plant rich diets, (3) electric vehicles, and (4) rooftop solar. When taken together, the thirty actions could mitigate 19.9 to 36.8% of global emissions between 2020 and 2050 (Williamson et al., 2018). Reinforcing the second of these recommendations, a *Lancet* study produced an analysis of the optimal diet for human health and what is required for environmental sustainability, concluding that we need to cut the vast majority of meat out of our diet by 2050 (Willett et al., 2019).

If further evidence were required, a report by Creutzig et al. (2016) found that dietary shift has the potential to reduce emissions in the agricultural sector by more than 70% by 2055 based on BAU scenarios (see also Green et al., 2015 for the UK). The 2019 '1.5 Degree Lifestyle' report also emphasises reducing meat and dairy consumption, switching to non-fossil-based energy, and reducing car use and air travel. Taken together, food, housing and transportation comprise approximately 75% of total carbon footprints (Akenji et al., 2019).

Though we do not return to the theme in the report, it is worth noting that at the most personal end of assigning individual responsibility, one controversial element that ecologists mention (Porritt 2020), and which is drawn attention to by other writers and activists (advocating 'birth strikes'), is population control.[3] The decision to have fewer children or no children at all, according to some estimates, is the most significant way of making a personal contribution to avoiding emissions. For example, according to one study, having one fewer child prevents 58.6 tonnes of carbon emissions every year. That compares with living car-free (which saves 2.4 tonnes), avoiding a transatlantic return flight (1.6 tonnes), or eating a plant-based diet (0.82) (Wynes & Nicholas, 2017). Having one fewer child, Wynes and Nicholas argue, is vastly more significant than any other choice that an individual could make. Another study found that having fewer children was almost 20 times more important than any other choice an individual can make.[4]

2 https://www.leonardodicaprio.org/project-drawdown-100-solutions-to-reverse-global-warming/
3 https://www.theguardian.com/books/2020/jul/25/why-a-generation-is-choosing-to-be-child-free?CMP=Share_iOSApp_Other
4 https://today.oregonstate.edu/archives/2009/jul/family-planning-major-environmental-emphasis

Such claims have been questioned, however, regarding the methodology used to calculate emissions,[5] and reignite old controversies about the dangers of inviting regressive birth control measures including forced sterilisations and other measures aimed at controlling women's bodies. Additionally, there is the thorny question of attribution of responsibility for emissions if it is assumed that parents are held to account for the unrealised 'emission entitlements' of future generations.

Taken together these studies point to the huge potential of behaviour change to achieve the aims of the Paris Agreement. The means of realising these potential contributions is less well understood, however. Behaviour change has not been given high priority in current climate policy strategies. Despite its huge potential, sustainable behaviour is often downplayed in debates about climate mitigation. In the international climate policy arena, behaviour change has often been neglected and overshadowed by a focus on technology and market mechanisms. This has side-lined a greater focus on changing consumption and demand-side options, in addition to supply-side measures.

The idea that sustainable behaviour requires changes at both the individual and political levels, and that these two areas are not only linked, but also reinforce one another, is gaining traction. The 1.5 Degree Lifestyles report states: "the sheer magnitude of change required for a shift towards 1.5-degree lifestyles can only be achieved through a combination of system-wide changes and a groundswell of actions from individuals and households" (Akenji et al., 2019). Lifestyles can be targeted 'from above' through policies and attempts to shape infrastructures and choice architectures, as well as emerge organically 'from below' from autonomous actions on the part of civil society and households. This implies a combination of cultural change and shifting social norms, alongside interventions by institutions and through the market as part of a broad *ecosystem of transformation*. This suggests the need for understanding pathways to change which combine top-down and bottom-up, state, market and civil society-led transformations (Scoones et al., 2015).

There is evidence of a recent shift in approach towards behaviour change as it gains the increasing attention of policymakers. In their 1.5 °C report published in 2018, the IPCC noted with "high confidence" that "pathways that include low energy demand (…), low material consumption, and low GHG-intensive food consumption have the most pronounced synergies and the lowest number of trade-offs with respect to sustainable development" (IPCC SR15, 2018:21). Likewise, in the latest *World Energy Outlook* a scenario for primary energy demand imagines falls by 17% between 2019 and 2030 even though the global economy is twice as large where 'Electrification, efficiency gains and behaviour changes are central to achieving this'.[6] The 2020 UN *Emissions Gap* report meanwhile, for the first time, included a chapter dedicated to 'equitable low carbon lifestyles'. It calls for 'Reforming consumption behaviour', noting that although: two-thirds of global emissions are linked to private households, when using consumption-based accounting. Developed nations, in particular the wealthy, bear greatest responsibility. The combined emissions of the richest 1% of the global population account for more than the poorest 50%. This group will need to reduce its footprint by at least a factor of 30 to stay in line with the Paris Agreement targets. The poorest 50% could actually increase their footprint several times.[7]

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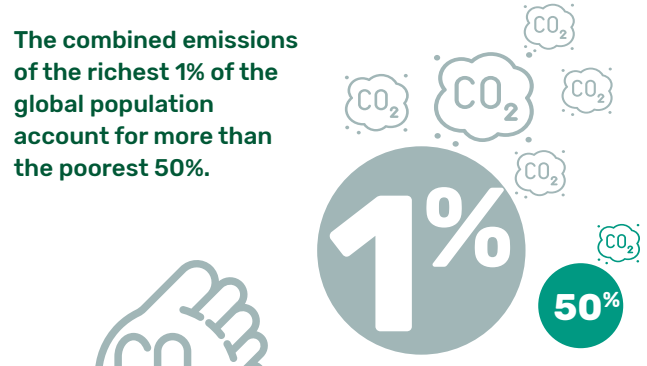

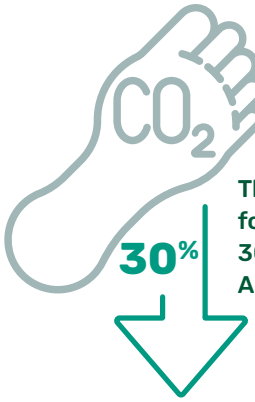

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5 https://iopscience.iop.org/article/10.1088/1748-9326/aab213
6 https://www.iea.org/reports/world-energy-outlook-2020/achieving-net-zero-emissions-by-2050#abstract
7 https://www.unep.org/interactive/emissions-gap-report/2020/

Keeping global warming well below 2°C and aiming at halting warming at 1.5°C requires halving greenhouse gas emissions by 2030. According to Akenji et al. (2019), this means reducing consumption-based emissions to a per capita lifestyle footprint of approximately 2.5 tonnes of greenhouse gas emissions by 2030, and 0.7 tonnes per person by 2050, if not sooner. This would require a considerable transformation given that a 1.5 tonne carbon lifestyle demands changes to food systems, a reduction in household energy use, car ownership, and air miles travelled in the order of three quarters or more (Moore, 2015). It is unsurprising that politicians, businesses and NGOs are not clamouring to reflect on, let alone act upon, the political, economic, social and cultural implications of this. As President Bush Snr. famously stated at the Rio conference in 1992 'The American way of life is not up for negotiation'.[8] Yet it is a way of life, increasingly emulated and pursued the world over, that very much needs to be re-negotiated if climate chaos is to be avoided.

Policy can affect such change through a range of tools which include regulation, the provision of infrastructure, market mechanisms and financial rewards (Hardman et al., 2017) and public-facing information campaigns targeted at a range of sectors. For example, this will include support to more plant-based diets given that the report makes clear that livestock are responsible for more GHG emissions than all other food sources (up to 14.5% of global greenhouse gas emissions). Globally, savings of CO_2 equivalent of between 29 and 70% are possible by moving towards a more plant-based diet including measures aimed at reducing the demand for meat and other livestock products, bringing other co-benefits such as reducing consumption in line with human health guidelines (Willett et al., 2019). Likewise, efforts to reduce food waste need to be stepped up given the climate impacts of food production, of which a third currently gets wasted (FAO, 2011; 2019).

For industry, depending on the industrial sector, mitigation consistent with 1.5°C would mean a reduction of final energy demand by one-third, an increase of the rate of recycling of materials, and the development of a circular economy (IPCC SR15, 2018:335). There remains huge untapped potential to realise gains in energy efficiency and energy conservation. In the transport sector, for example, pricing and regulatory policies have successfully brought about change in places as diverse as Singapore, Stockholm and London where car ownership, car use, and GHG emissions have all been reduced (IPCC SR15, 2018:366). Notably, positive momentum can be brought about as co-benefits around health and financial savings become apparent.

So, what is a sustainable lifestyle? Getting a clear metric is a challenging task. Below we discuss a range of approaches from 'One Planet Living' to sustainable consumption corridors, many inspired by the need to 'shrink and share': establishing upper limits on consumption and minimal thresholds to ensure the developmental needs of all are adequately met. In relation to climate change, projections have been produced about what 1.5-degree compatible lifestyles look like (Akenji et al., 2019). As already emphasised, climate change is of course only one among a number of sustainability challenges we face, but a failure to tackle climate change will render most SDGs impossible to achieve. At the level of principles and aims, Akenji & Chen (2016:3) suggest,

> *"A "**sustainable lifestyle**" is a cluster of habits and patterns of behaviour embedded in a society and facilitated by institutions, norms and infrastructures that frame individual choice, in order to minimize the use of natural resources and generation of wastes, while supporting fairness and prosperity for all."*[9]

Although behaviour change is often assumed to be voluntary, we need to constantly recognise the changing circumstances that give rise to it. The responsibility for societal transformations cannot be put on the sum of all individual shoulders. Such transformations can only be achieved when embedded in sustainable systems change, integrating shifts from individual values and community behaviour, with societal changes in institutions and governance. As Commissioner Lewis Akenji told us, "It is right to give *some* responsibility to individuals and households for the implications of their choices, but they are being pushed beyond the limits of their capacity and agency. It is choice architectures and systems of provision that are key. This is what locks people into particular modes of consumption". Indeed, the role of behavioural and value change provokes mixed reactions in environmental debates.

8 http://www.ipsnews.net/2012/05/us-lifestyle-is-not-up-for-negotiation/

9 https://www.oneplanetnetwork.org/sites/default/files/a_framework_for_shaping_sustainable_lifestyles_determinants_and_strategies_0.pdf
For a useful overview of different ways of conceptualising sustainable lifetsyles see Agnew et al. (2020).

Mary Heglar puts it bluntly,

> **The belief that this enormous, existential problem could have been fixed if all of us had just tweaked our consumptive habits is not only preposterous; it's dangerous. It turns environmentalism into an individual choice defined as sin or virtue, convicting those who don't or can't uphold these ethics…While we're busy testing each other's purity, we let the government and industries — the authors of said devastation — off the hook completely. This overemphasis on individual action shames people for their everyday activities, things they can barely avoid doing because of the fossil fuel-dependent system they were born into… Fight the oil and gas industry instead. (Heglar, 2019).**

Credit: National Union of Students, Green Impact, Students Organising for Sustainability

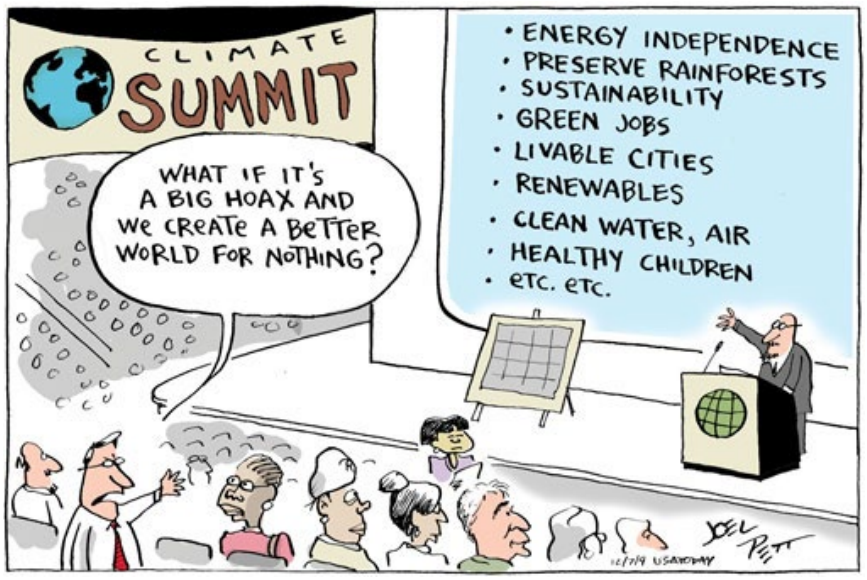
Even advocates of the significance of individual and household behaviour change recognise the limits of approaches which rely on that strategy alone. Dubois et al. suggest that 'short term voluntary efforts will not be sufficient by themselves to reach the drastic reductions needed to achieve the 1.5 °C goal; instead, households need a regulatory framework supporting their behavioural changes. But there is also a mismatch between the roles and responsibilities conveyed by current climate policies and household perceptions of responsibility' (2019:144). This reinforces our central argument about the importance of challenging these binaries and linking individual and system change as part of ecosystems of transformation. As one Commissioner put it, it is often assumed that somehow 'fighting the oil and gas industry' is not itself something that is done by individuals. But who exactly is going to do this fighting if not people, organised collectively? In which case, our behaviours and actions not only matter, they are at the very heart of changing systems in the way that we want to see happen.

Despite this, many policy approaches embody this disconnect and have been built around what Shove calls 'ABC' models of behaviour change (Cabinet Office, 2013), in which attitudes (A), drive behaviour (B), and hence choices (C) (Shove, 2010). Typically, 'individuals do not consciously decide to emit carbon. Rather, emissions are associated with the practices and routines of everyday life, from cooking to travelling' (Newell et al., 2015:527). The routines of daily life are often embedded in the use of technologies, materials and systems which individuals have little power to alter. This means going beyond 'expressions of individual preference and choice', to open up discussions about the very definition of 'taken for granted needs and the different means by which warmth and welfare, freedom and mobility, and economic and energy security might be achieved in different settings' (Newell et al., 2015:527). The generation of demand and desire, everyday routines and practices, and the ways these are sedimented by regulations, social pressure and built infrastructures, all require greater attention.

Influencing behaviour

Over the last three decades, there has been a plethora of initiatives targeted at individuals and households aimed at shifting behaviours in order to address climate change and other sustainability challenges. Strategies by governments, corporations, and non-governmental organizations have included regulatory measures, market mechanisms, and interventions aimed at shifting behaviours and norms through education and public information campaigns, for example.

Yet gaps remain in our understanding of the complex ways in which individual behaviours are influenced and interventions work best, which different disciplines have sought to fill using a broad range of methods and theories (which we explore in chapter 3 below). As Vandenbergh and Sovacool (2016:93) put it: "A recent renewed focus on individual behaviour reflects the growing recognition that additional emissions reductions from large, industrial sources would be expensive and inadequate to achieve many pollution standards and that individuals often contribute more emissions than the industrial sector, if viewed as a discrete source category." It also flows from the growing understanding of the influence of norms on environmental behaviours (Doherty & Webler, 2016; Carlson, 2005).



Cartoon by U.S. cartoonist Joel Pett for USA Today.

This more socially informed analysis of everyday decision-making departs from and challenges conventional accounts of economic rationality (Vandenbergh & Sovacool, 2016). It strengthens an appreciation of social context whereby: (i) the potential of households to reduce their footprint is greatly influenced by the size of the home and the demographics of who lives there (see also Sovacool et al., 2018; Tukker et al., 2010), (ii) there are different key phases of life when particularly significant household decisions are made, such as when having children or retiring, (iii) regulation is required to support households in going beyond the effect of short term voluntary actions which will be insufficient to achieve the degree of change required by the Paris Agreement, (iv) this will help to address the misalignment between the roles and responsibilities assumed in climate policy and households' own perceptions of the responsibilities they bear (Dubois et al., 2019:144; see also Girod et al., 2014).

Recognising the pace and scale of the sustainability transitions now required, it is a key moment to consolidate knowledge, evidence and insights about the role of behavioural change contributing to societal system transformations. It is important to contextualise and globalize the conversation about scaling behaviour change across cultures and regions and to look at the interface with different social cleavages and dynamics such as race, class and gender. The focus to date has been on behaviour change in richer societies for obvious reasons relating to their higher carbon footprints and historical responsibility, as well as the fact that most behaviour change research is conducted in those countries. There is also increasing attention to the role of the richest - the 1% - in driving climate change (Wiedmann et al., 2020) or what Kenner refers to as the 'polluter elite' (Kenner, 2019). Yet, as others note, rapidly industrialising countries are projected to contribute almost all of the growth in carbon emissions, with increases in household consumption driving much of that increase, as the expanding middle classes in China and India reach the per capita levels of the USA and EU, underscoring the importance of what has been referred to as 'lifestyle leapfrogging' (Schroeder & Anantharaman, 2017).

A key neglected dimension of the debate is how behaviour change will be induced by the effects of global heating. Like it or not, the world is already committed to drastic change as a result of global heating (combined with other environmental and non-environmental threats). The impacts of climate change are already being felt today around the world by millions (Ohba & Sugimoto, 2018; Williams et al., 2019; Wallace-Wells, 2019). Our climatic future, where more frequent and severe impacts are now unavoidable, means that a certain degree of behaviour change will be inevitable, as humanity adapts to a warmer world. Behaviour change in this regard can be understood as a form of adaptation, where habitual behaviours, systems of provision, patterns of mobility and consumption will shift to ensure resilience in the face of climate impacts (Semenza et al., 2011). This type of behaviour change is visible in altering food systems in the

Photo credit: Liam Edwards, June, 2020.

face of changing climates, crop failures and increased pests (Shi et al., 2019; Gomez-Zavaglia et al., 2020), as well as human migration in countries like Bangladesh (Bernzen et al., 2019) and regions like the Middle East and Central Asia (Piguet & Laczko 2014). Yet we are not passive players in this unfolding scenario. The terms of our adaptation, the depth of the changes and the pace at which they take place, and who bears the greatest costs of adjustment, are still very much up for contestation with important justice implications. As Greta Thunberg et al. recently noted, "we are inevitably going to have to fundamentally change, one way or another. The question is, will the changes be on our terms, or on nature's terms?" (2020). And if the 'our' refers to humanity as a whole, who precisely will get to set these terms?

Policies and initiatives must centre on what is to be gained from scaling sustainable behaviour change - rather than what is to be lost - in favour of revitalised notions of collective benefit, the common good and reduced social and economic inequality. There is, after all, much to be reaped from rising to this challenge, from cleaner air and more vibrant local economies, to enhanced leisure time (or 'time affluence' as Kasser and Sheldon 2009 put it) and improvements to wellbeing. Much existing research suggests it is possible to live a 'good life' within planetary boundaries (Hickel, 2019; Millward-Hopkins et al., 2020), and research on the 'spirit level' shows that beyond a certain level of income wellbeing indicators do not improve (Wilkinson & Pickett, 2009). Steinberger et al. (2020) also show how increases in carbon emissions are not coupled with increased life expectancy. In many cases, mitigating climate change and its impacts also need not be the central motivator for such societal shifts (Howell et al., 2016; Howell & Allen, 2017; RESET, 2020), and scaling behaviour change may in fact benefit from *not* always using climate concerns as its central driver. The majority of the Commission were clear that scaling up sustainable behaviour change would, for the most part, improve the everyday material and spiritual wellbeing of most people. Either through the myriad co-benefits associated with sustainable lifestyle transformations and reduced levels of inequality, or the more esoteric shifts in values and approaches to community, there is significant scope and desire for change.

2

The scale of the Challenge

Photo credit: Tan Kaninthanond.

Published in autumn 2018, adopting language more associated with radicals and revolutionaries, the IPCC, often criticised for being cautious, called for **'transformative systemic change'** in order to achieve the goals of the Paris Agreement (IPCC, 2018). That scale of change needs to occur across all sectors and regions of the world at unprecedented speed.

Behaviour change by all actors is a crucial element of this transformation since 1.5°C-consistent pathways assume significant changes in behaviour. The IPCC SR15 (2018) made clear that behaviour change and demand-side management can significantly reduce emissions, thus substantially limiting the reliance on carbon dioxide removal to limit warming to 1.5°C. This message was underscored by the 2020 UN Emissions Gap report (UNEP, 2020).

90%

the need for reductions of over 90% in greenhouse gas emissions by 2050 from today's lifestyles

New ground has also been broken with the report *1.5-degree lifestyles: Targets and options for reducing lifestyle carbon footprints,* which makes for sobering reading. The report assessed the GHG emissions and reduction potential by looking at lifestyle carbon footprints, including emissions both directly emitted and indirectly induced from household consumption[10] (Akenji et al., 2019:9). It highlights the need for reductions of over 90% in greenhouse gas emissions by 2050 from today's lifestyles. This implies per-person carbon footprint targets of 2.5 (tCO_2e) in 2030, 1.4 by 2040 and 0.7 by 2050. To put this into context, allowing for differential impacts and uneven historical responsibility, this means footprints in developed countries need to be reduced by 80-93% by 2050.

This is assuming that actions for a 58–76% reduction start immediately to achieve the 2030 target. Yet, even for developing countries, the report highlights the need to reduce footprints by 23–84%, depending on the country and the scenario, by 2050 (IGES, 2019). These required emissions reductions reflect very different starting points where Ivanova et al. (2020:1) have highlighted, for example, that "the average per capita carbon footprint of North America and Europe amount to 13.4 and 7.5 tCO_2eq/cap, respectively, while that of Africa and the Middle East—to 1.7 tCO_2eq/cap on average".

10 It excluded those emissions induced by government consumption and capital formation such as infrastructure.

One Planet Living

Adopting a different approach, Moore (2015:4747) develops consumption benchmarks in the domains of food, buildings, consumables, transportation, and water by combining **ecological footprint analysis** with 'lifestyle archetypes'. The background to this is that while there have been gains in efficiency regarding energy and material use in the region of 30% and 50% respectively across the global economy, studies of 'urban metabolism' reveal that resource consumption in cities is growing (Moore, 2015:4748). Moore explores the sorts of transformative changes that would be needed for the per capita consumption patterns of urban dwellers to achieve ecological sustainability. They include, "a 73% reduction in household energy use, a 96% reduction in motor vehicle ownership, a 78% reduction in per capita vehicle kilometres travelled, and a 79% reduction in air kilometres travelled" (Moore, 2015:4747). Moore's work clearly underscores that in a world where there is still no clear substitution, the goal has to be *absolute* and not just *relative* reductions.

Specific tools for calculating impact include Life Cycle Analysis (LCA) and Ecological Footprint Analysis (EFA) and Environmentally Extended Input-Output Analysis (EEIOA). The former is used as a communication tool for raising awareness about sustainable consumption choices, while the Ecological Footprint compares a population's demand on productive ecosystems (its footprint) — with the ability of those ecosystems to keep up with this demand (biocapacity). The Global Footprint Network's 'National Footprint Accounts' tracks the footprints of countries by measuring the area of cropland, grazing land, forest, and fisheries required to produce the food, fibre, and timber resources being consumed and to absorb the carbon dioxide (CO_2) waste emitted when burning fossil fuels.[11] Ecological Footprint studies reveal that currently the "world is in ecological overshoot by as much as 50 percent" (Moore & Rees, 2013:42).

There is significant scepticism, nevertheless, about the use of some types of footprint tools amid the proliferation of apps and tools to measure peoples' carbon use (and monitor their consumption habits), especially when supported by industry actors such as oil companies. Here there is a valid concern about such tools serving as a diversionary tactic to shift attention away from their own responsibility to act and a way of enabling 'guilt-free' unsustainable consumption as long as offsets are provided to absorb the carbon released.[12]

An interesting alternative to this type of footprint analysis is **carbon hand-printing** (Grönman et al., 2019; Sitra, 2020). While carbon footprints analyse the environmental costs of individual actions, mobility choices and consumption patterns, carbon hand-printing looks to the positive actions that can be extended beyond an individual's lifestyle to help other people, and wider society, shift onto a more sustainable pathway. Individuals' carbon handprints can comprise consumer choices, such as purchasing a dairy-free milk alternative, civic duties, like organising an organic food market, or political actions, such as voting for political parties with a comprehensive climate policy platform. Vitally, carbon hand-printing takes into account the multiple roles we all fulfil - at work, as part of the community and within the home - and how this diversity of roles can be leveraged to enact societal behaviour change. This is consistent with the more holistic and integrated approach to behaviour change that we are advocating for here, as it underscores the multiple arenas in public spheres in which behaviour change occurs beyond the household, whilst reflecting the unevenly distributed agency to bring about that change (Stern, 2000).

Defining parameters

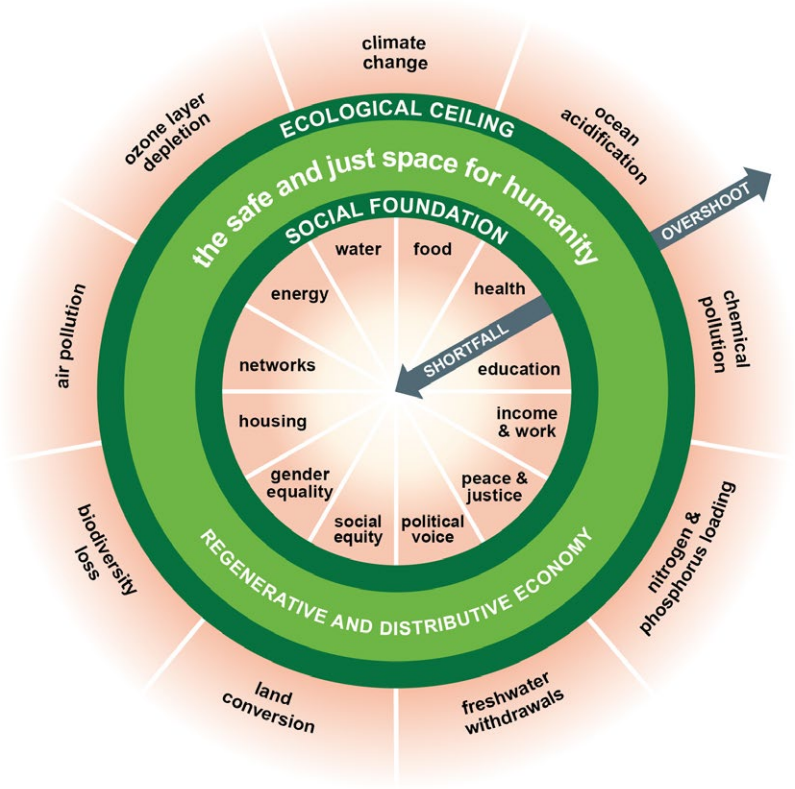
*"There **are** limits. We can try to recognise them in time, or we will run into trouble. The economic system is a man-made system - we can change it. But we can't change the ecological system."*

(Commissioner Sylvia Lorek)

At a societal, international and national level, many Commission members emphasised the inevitability of targets regarding *what* has to be reduced by *when*, if we want to remain within our **ecological limits** (Lorek & Fuchs, 2013). As Commissioner Lewis Akenji put it: "The reality is that we need to give up certain things. We need to consider the concept of environmental space – thresholds

11 https://www.footprintnetwork.org/2016/03/08/national-footprint-accounts/

12 https://grist.org/energy/footprint-fantasy/?utm_campaign=btns&utm_source=share&utm_medium=email



Source: WIRED

– upper and lower limits to get us onto a more sustainable pathway". The means and modalities of doing this are challenging. Commissioner Doris Fuchs explains, "Limits guarantee freedom, they do not restrict it".

However, they are highly controversial and difficult to enforce in a neoliberal context due to ideological commitments to notions of consumer sovereignty, freedom of choice, and assumptions about what Commissioner Bill Rees calls 'human exceptionalism': the idea that the drivers of extinction of all other species on the planet somehow do not apply to humans. As Commissioner Sally Weintrobe elaborates, limits *will* be imposed by reality, but they are an emotionally challenging concept for people to accept from a psychological point of view, when, in many societies, the dominant culture of materialism has so aggressively promoted the pursuit of plenty: "It is shocking for us to accept limits. Expect a reaction! We are reluctant to take on the culture. We are not brave enough to tell people it might mean rationing because people are reluctant to accept limits...But we have to start with the world that we want". This may explain the appeal of the Commissioner Juliet Schor's (2011) idea of 'plentitude' which we discuss further below: liberating time and freedom for creative expression and civic expression in return for constraints on excessive consumption and income.

Some advocates of de-growth are critical of the notion of limits from a different angle. Hickel suggests for example, that "The notion of limits puts on the wrong foot from the start. It presupposes that nature is something 'out there', separate from us, like a stern authority hemming us in. This kind of thinking emerges from the very dualist ontology that got us into trouble in the first place" (2020:34). He argues instead for 'interconnectedness': a deeper value shift in our relationship to nature.

Unsurprisingly, this ambivalence is also reflected in the collective reluctance among political leaders to convincingly confront the need for limits, which leads Commissioner Sylvia Lorek to advise that change needs to come from lower levels of governance, "We can't wait for the global community to address budgets and limits. If we wait for political agreement to occur at the global level, we are under an illusion. So we need bottom-up, regional, and national levels to take the first steps instead". In this spirit, Amsterdam's City Doughnut initiative, which 'downscales' the concept of a 'global doughnut' was heralded by several Commissioners as a much-needed step in the right direction, by striving to create a circular economy, operating in the space between its social foundations and ecological ceilings (Raworth et al., 2020, also see Table 1 below). We also note below the importance of governance innovations such as citizen's assemblies to drive climate action from below, while also challenging incumbent control of the conversation about what count as 'plausible' and 'realistic' responses to climate crisis. Table 1 below summarises various attempts to define the parameters of consumption.

Table 1: Defining fair shares for sustainability[13]

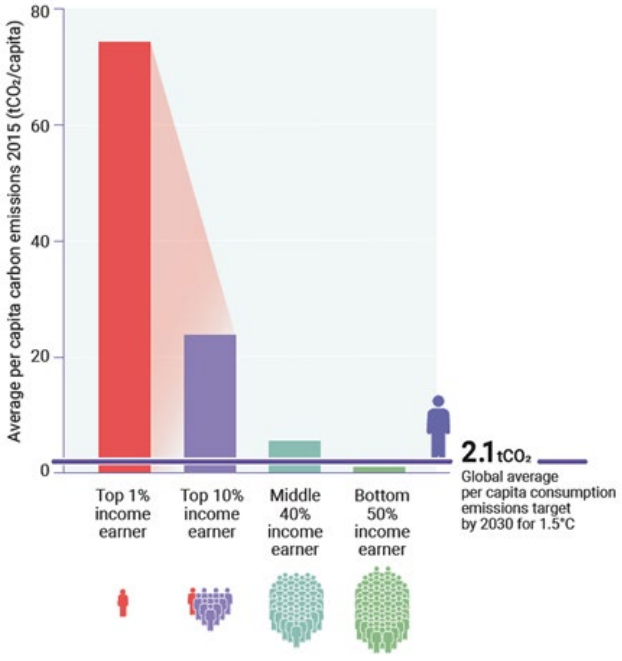
Approach	Means	Level
Contraction and Convergence[14]	Per capita carbon entitlements	Globally agreed
Greenhouse Development Rights framework[15]	Calculation of responsibility and capacity beyond a development threshold	Globally agreed
Individual carbon allowances/rations derived from global carbon budgets[16]	Per capita entitlements. A carbon ration operates as a simple allowance (in kilos of carbon), paid into a digital ration account to citizens	Globally agreed, nationally implemented
Carbon fee and dividend[17]	Enforced through an initial fee of $15/ metric tonne on the CO_2 equivalent emissions of fossil fuels The proposal is that this would rise by $10/metric tonne each year. 100% of the net fees from the carbon fee would then be held in a Carbon Fees Trust fund and returned directly to households as a monthly dividend[18] A border tax adjustment to stop business relocation	Globally and nationally
Sustainable Consumption Corridors	Defining upper and lower limits or thresholds of consumption	Corridors agreed and implemented in local and national contexts, but with consideration of global conditions and the needs of future generations.
Doughnut Economics[19]	Outer limits set by planetary boundaries. Inner floor set by basic social needs	National, city level
Ecological footprint analysis[20]	Compares a population's demand on productive ecosystems with biocapacity (the ability of those ecosystems to keep up with this demand)[21]	National, city or individual

13 For a useful review of many of these approaches see van den Berg et al. (2020).
14 http://gci.org.uk/
15 http://gdrights.org/about/
16 https://carbonrationing.org/support-for-total-carbon-rationing/
17 https://citizensclimatelobby.org/basics-carbon-fee-dividend/
18 https://citizensclimatelobby.org/basics-carbon-fee-dividend/
19 https://www.kateraworth.com/doughnut/
20 https://www.footprintnetwork.org/our-work/ecological-footprint/
21 https://www.footprintnetwork.org/our-work/ecological-footprint/

Social dimensions

The changes required to get the world onto a 1.5 degree pathway should not to be shouldered equally by all in society. As Figure 1 illustrates, the average per capita emissions share of CO_2 varies strikingly between income groups. Considerable effort is required to ensure the socially differentiated drivers and contexts of consumption are addressed seriously to avoid individualising responsibility or saddling poorer groups with a disproportionate burden to act. As Commissioner Kate Burningham noted, "we are *not* all in this together". The most prolific consumers, movers and polluters must make the most substantial changes to their lifestyles and, by doing so, will generate substantial carbon savings in the short term. Commissioner Kevin Anderson has shown that if the richest 10 of society were to bring their emissions in line with the level of the average European, and the remaining 90% of humanity made no adjustments to their lifestyles, then global emissions would drop by one-third within a couple of years (Anderson, 2018).

Figure 1: Per capita and absolute CO_2 consumption emissions by four global income groups in 2015



Source: UNEP Emissions Gap Report 2020

It is a small percentage of humanity that needs to make the greatest transformations in their lifestyle – a fact that is all too often overlooked in public debate around sustainable behaviour change. As Moore and Rees show on the basis of their footprint analysis,

> **the main perpetrators of this global experiment are the relatively well-educated 20 percent of the human population who live in high income consumer societies, including most of North America, Europe, Japan, and Australia, along with consumer elites of low-income countries. Densely populated, high-income countries typically exceed their domestic carrying capacities by a factor of three to six or more and thus impose a growing burden on other countries and the global commons. This wealthy minority of the human family appropriates almost 80 percent of the world's resources and generates most of its carbon emissions from fossil fuels (2013:42).**

Key to the successful design and social acceptance of any scheme to set and enforce limits and constraints on consumption, or 'shrink and share' schemes, therefore, is **equitable allocation**. Moore and Rees (2013) consider 1.7 gha/per capita to be each person's equitable or "fair Earth-share" of global biocapacity. Currently, more than half the world's population lives at or below a fair Earth-share. Most of those people are based in Latin America, Asia, and Africa (2013:42).

The process for agreeing on those limits and determining the means by which they should be achieved raises a series of complex issues about which there has to be a public discussion (Fuchs, 2020). Public deliberation needs to determine minimum socially acceptable limits, which together with scientific expertise on planetary boundaries translate into maximum consumption limits, if all individuals living now and in the future are to have the opportunity to achieve the minimum levels of consumption. In this scenario, the minimum is defined by what constitutes a good life, and the good life is defined by being able to satisfy needs (as opposed to wants). This relates closely to the idea of doughnut economics: a safe operating space for humanity between meeting key developmental needs within ecological planetary boundaries (Raworth, 2017).

Current and historical **inequalities within and across societies** need to be addressed by 'shrink and share' schemes that limit and redistribute future entitlements to both production and consumption (see Table 1). This is the premise of proposals for *'contraction and convergence'* (towards an agreed per capita carbon entitlement), for example, which demand larger and nearer term reductions from richer countries that have over-used carbon space, and smaller and slower reductions from poorer countries that have pressing development needs to meet and

who have contributed far less to the problem of global heating thus far (GCI, 2018), as well as the *Greenhouse Development Rights* framework which only applies to citizens above a specific development threshold and only then on the basis of a calculation of responsibility and capacity to act (GDR, 2020).

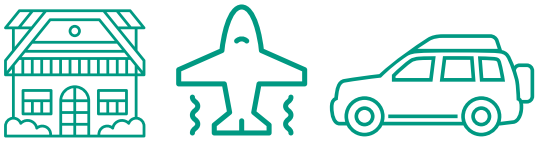
Nearly half of the total growth in absolute emissions was due to the **richest 10%** (the top two ventiles), with the **richest 5%** alone contributing over a third (37%).

On this basis, the *Civil Society Equity Review* (2018) concludes that the most equitable mitigation framework would see the richest 10% globally take responsibility for 87% of the total emissions cuts needed, while the poorest 50% are not yet required to cut emissions at all. Though, as we emphasise throughout the report, there is critical scope to avoid 'carbon lock-in' through the provision of services and choice architectures for poorer communities and thus to enable a degree of 'lifestyle leapfrogging' (Schroeder & Anantharaman, 2017). Underscoring this analysis, SEI and Oxfam have produced a database that covers 117 countries, around 90% of the world's population, and global carbon emissions across the 1990–2015 period. They conclude: "The disproportionate impact of the world's richest people is unmistakable – nearly half of the total growth in absolute emissions was due to the richest 10% (the top two ventiles), with the richest 5% alone contributing over a third (37%). The remaining half was due almost entirely to the contribution of the middle 40% of the global income distribution (the next eight ventiles). The impact of the poorest half (the bottom ten ventiles) of the world's population was practically negligible" (Kartha et al., 2020:7).

There is, therefore, a clear and obvious need to **tackle uneven consumption within countries** (see Box 1 on the polluter elite). Across Europe, analysis reveals that the emissions reductions achieved since 1990 have predominantly come from lifestyle changes and the reduced consumption of lower and middle income EU citizens, while the total emissions of the richest 10% actually grew. Over the period of 1990 to 2015, the richest 10% of EU citizens were responsible for 27% of the EU's total cumulative emissions - the same amount of emissions as the poorest half of the EU population combined (Gore & Alestig, 2020).

According to the *Rapid Transition Taskforce Report,* in the UK "over 40% of those in the top income vigintile take three or more flights each year, compared with around 4% of those in the bottom three vigintiles. Data show that these patterns are repeated in other rich nations such as Sweden, France and Germany" (2019:22).

Crucial to this enquiry, though, is the divergent nature of consumption among different income groups, with the richest sections of society actually increasing their consumption related emissions, whilst sharp contractions in emissions have taken place among the middle and lower income groups. Gore and Alestig (2020) note that between 1990 and 2015, the poorest 50% of the EU population's consumption emissions fell by 24% and emissions from the 40% of 'middle income' Europeans fell by 13%, respectively.



Emissions from the most affluent citizens, however, are going in the opposite way: **emissions from the richest 10% of the European population grew by 3% and emissions from the wealthiest 1% – the super rich – grew by 5%.**

These figures clearly show the need for a differentiated approach to behaviour change, as well as how the responsibility for emissions reductions is not shared equally across society. For example, to meet a 1.5-degree consistent emissions pathway by 2030, the richest 1% of the European population needs to reduce their emissions by a factor of 30, while the poorest 50% of the European population needs to halve their emissions (Gore & Alestig, 2020).

How reductions are made needs to be attentive to inequalities within societies to ensure extra burdens are not merely passed onto poorer and excluded groups. Commissioner Manisha Anantharaman (2014) highlights the invisible and implied labour behind the performance of sustainable lifestyles: the informal and gendered economies that, in some contexts at least, involve domestic staff, waste pickers and fleets of informal construction workers (for insulation, PV installation etc.). Levels of inequality within society are important here not only in terms of responsibility, or because they determine who bears the cost of action, but because they drive competitive consumption (Schor, 2015).

As Danny Dorling highlights,

"in more unequal societies, there is a proliferation of products that are designed not to last, so as to allow greater profits to be made. Producing endless must-have new versions exploits the higher levels of emotional insecurity that living with great inequality generates" (2017).

What this reveals is that "more economically unequal countries in the global North have higher levels of pollution, consume more meat and fish, take more flights, use more water for domestic use, and dump more household waste, across the entire income spectrum" (Rapid Transition Taskforce, 2019).

Box 1: What is the polluter elite?

"The polluter elite are extremely rich individuals whose net worth, luxury lifestyle and political influence all rest on wealth that is derived from investments in polluting activities e.g. fossil fuels. What differentiates the polluter elite from other stakeholders is that as major shareholders they profit from the fossil fuel economy. As decision makers they approve lobbying of governments (funding lobbyists and direct donations to political parties) to block the transition away from fossil fuels. They use their political power to restrict the consumption options of ordinary citizens to keep them "addicted" to lifestyles dependent on fossil fuels (e.g. diesel and petrol vehicles, plastic packaging, coal and gas for electricity, heating and cooking)."

Source: Kenner, https://whygreeneconomy.org/the-polluter-elite-database/

What this work suggests is the need for priorities and targeted approaches to addressing over-consumption among richer groups and to focus on particularly carbon-intensive behaviours - or what we refer to as **hotspots** (see Table 2). The IGES report (Akenji et al., 2019) found that just three domains (nutrition, housing and mobility) have the largest impact, amounting to approximately 75% of total lifestyle carbon footprints.

Table 2: Sustainable consumption hotspots

Key hotspots	Possible measures (behaviour/practices in italics)
Travel: Air and car travel	• Planning that reduces need and demand for car use • Congestion charges • Vehicle fuel-efficiency improvement • Affordable electric public transport • Frequent flyer taxes/air travel adaptation levy • Support for bicycle lanes and pedestrianisation ■ ***Car-free private travel*** ■ ***Ride and car sharing*** ■ ***Electric and hybrid cars*** ■ ***Reductions in air travel***
Energy: Fossil fuel-based energy	• Planning policies to reduce energy use • Extensive and affordable supply of renewable energy • Smart grids ■ ***Switching to renewable energy tariffs/sources***

Key hotspots	Possible measures (behaviour/practices in italics)
Food: Meat and dairy consumption and food waste	• Taxes on meat • Procurement policies • Innovations in farming methods and protein creation • Labelling of sustainability of foods ■ ***Moving towards plant-based diets*** ■ ***Reducing food waste***
Housing: Poor insulation, high energy and resource use	• Material footprint profiling • Restrictions on house size ■ ***Heat pumps*** ■ ***Smart metering*** ■ ***Replacing gas for heating and cooking*** ■ ***Insulation***

IGES suggests that if some of these options were to be fully implemented, they could reduce the footprint of each hotspot domain by anything from a few hundred kilograms to over a tonne annually (Akenji et al., 2019:vi). Ivanova et al. (2020) find overall that from many of the measures listed above, "the top ten consumption options together yield an average mitigation potential of 9.2 tCO_2eq/cap, indicating substantial contributions towards achieving the 1.5°C–2°C target, particularly in high-income contexts" (2020:1).[22] Many authors are at pains to point out, however, that any such gains are contingent on changes across society and the economy. As the IGES study makes clear: "The required levels of reductions, exceeding 90% based on current lifestyle carbon footprints, imply a radical rethink of sustainability governance and the need for new business models to shift the paradigms on which we base infrastructure, economies and consumer lifestyles" (Akenji et al., 2019:5).

Given what has been said about the complexity of the challenge of delivering behaviour change at scale, how do we approach the question of scale? There are a variety of conventional approaches, which are summarised in Box 2. Scaling *'up'* through size, represents (vertical) 'scaling by numbers' or getting more people to engage in specific sustainable behaviours and activities. Scaling *'out'* is more context-specific, involving rolling out change across different contexts (horizontally). Scaling through *depth*, is a more individual and internal process, targeting values, norms and worldviews consistent with a broader sustainable lifestyle (rather than individual actions). Finally, *reactive* scaling can be understood as adaptation to events or crises rather than conscious planning.

"The problem is 50/50 - 50% behaviour and 50% technological. The technologies need to co-evolve with behaviours to have a transformative impact. People's voluntary behavioural changes could halve their emissions - this is huge with little regulation and just providing better information. 'We will do half of what is needed by ourselves' is a powerful message".

Commissioner Prof. Benjamin Sovacool

22 For transport, the options with the highest mitigation potential include living car-free, shifting to a battery electric vehicle, and reducing flying by a long return flight with a median reduction potential of more than 1.7 tCO_2eq/cap'. For food, "the highest carbon savings come from dietary changes, particularly an adoption of vegan diet with an average and median mitigation potential of 0.9 and 0.8 tCO_2eq/cap, respectively". For housing "Shifting to renewable electricity and refurbishment and renovation are the options with the highest mitigation potential … with medians at 1.6 and 0.9 tCO_2eq/cap, respectively" (Ivanova, 2020).

Box 2: Conventional approaches to scaling

- **Scaling 'up' through size:** This approach seeks to achieve scale-up through rapid growth, expansion and roll-out. In terms of behaviour change, it is most commonly associated with **vertical** shifts to impact an increasing number of people by **mainstreaming** certain types of behaviour, and therefore magnifying the scale of achieved emissions reductions. An example would be the uptake of cycling that has been mainstreamed in cities in many Scandinavian and Northern European countries. While this approach to scaling takes into account the urgency of transformation required, it may fall victim to the fallacy of 'one-size-fits-all' or the flaws of a top-down approach (i.e. it generates resistance or is less adaptive to local cultural conditions).
- **Scaling 'out':** Similar to scaling in size, this approach seeks to scale behaviours **horizontally**, including across different **contexts**, including localities, sectors, markets and regions. While speed is still an important aspect here, this approach is by necessity more contextualised than simply scaling 'up'. It may also be applied to organisations or communities with closed feedback loops and at a smaller scale where the replication of behaviour is more likely. For example, the Transition Network which started in the UK has inspired the proliferation of groups around the world which adopt a common approach and have shared aims, but adapt their strategies to the particular contexts they work in. There are now estimated to be between 2000 and 3000 communities involved in Transition initiatives in over 50 countries.[23]
- **Scaling through depth:** Instead of looking to externally scale behaviour change throughout society, this approach turns to the psychology of the self. Deep scaling seeks to **shift values** within individuals, and eventually, **cultural norms** in communities that then cascade and ripple out, leading to broader social transformations in behaviours. Many behavioural shifts and practices adopted by faith-based organisations and intentional communities adopt this approach.[24]
- **Reactive scaling:** Scaling may occur in response to shocks and stresses to physical and social systems (e.g. climate events, conflict, pandemics), ranging from short-term, reactive, 'coping' responses, to building resilience in the long-term, which could take place via any of the three scaling drivers mentioned above. The impacts of climate change are already being felt throughout the world, and with their frequency set to increase and intensify, a certain degree of behaviour change will be necessary in order to adapt. Climate impacts are already transforming patterns of behaviour and consumption. Here, behaviour change is a necessary, and in some cases mandatory, response to climate impacts as a matter of resilience. Examples include shifts in diet due to crop failures or shocks to work patterns as a result of dangerous levels of air pollution or high temperatures.

Other recent scholarship uses the language of **amplification** to develop a typology of eight processes which aim to increase the impact of initiatives for transformation: stabilizing, speeding up, growing, replicating, transferring, spreading, scaling up, and scaling deep (Lam et al., 2020).

Although some of these different conventional (overlapping) categorisations are useful, we suggest the need to **re-think scale**. Dominant approaches, such as mainstreaming, emphasise numbers and roll-out in a static, generic and socially undifferentiated way. This serves to decontextualise the nature of change, and often misrepresents where the predominant responsibility and agency for action lies (i.e with the polluter elite, while downplaying the role of choice editing and the provision of enabling infrastructures, for example). They also often emphasise size and reach, rather than directly acknowledging the limits necessary to avoid rebound effects. Such discussions often also fall into the scalar trap: the misconception that what works in one place will necessarily work elsewhere or that small changes can automatically and unproblematically be scaled. What is to be scaled, how and by whom are key yet neglected questions, but need to be a central part of conversations going forward.

23 https://www.rapidtransition.org/stories/transition-towns-the-quiet-networked-revolution/

24 See for example the Findhorn foundation https://www.findhorn.org/

For this reason, we offer an alternative and more holistic way of thinking about scale. Our point of departure is that many approaches mistakenly imply *shallow scaling*: that is, mainstreaming without disrupting key trends around consumption, work, growth, production. Instead, we suggest *deep scaling* needs to be transformative. This involves value shifts and culturing transformation through deep scaling, as well as concerted efforts to 'scale back' existing ways of doing things and challenging incumbent control over systems, infrastructures, finance and production. Ultimately, a combination of speed, breadth and depth of change will be required across multiple contexts, which we conceptualise as *'spiral' scaling*, consisting of mutually reinforcing feedback loops between the individual, social and systemic levels, towards strong global sustainability (see Box 3).

There are also a number of **challenges** for scalability that need to be considered and ameliorated within policies, strategies and initiatives. Beyond the 'scalar trap', there is also the pressure to create 'demonstration effects': that is, to provide evidence of impact and its evaluation. Yet measuring intangible outcomes such as shifts in values, for instance, is often harder to do. This is in addition to the well-known bias towards the 'present' that psychologists highlight[25] (or what economists might call 'discounting' the future), which makes it hard to persuade people to act now to avert future negative impacts which they may not suffer themselves. A deeper challenge still is what Commission member Bill Rees described in the following way drawing on insights from neuro-cognitive biology: "Arguably, there can be no greater systemic obstacle to behaviour change than evolved behaviours (nature) or entrenched ways of

Box 3: A new approach to scaling: Shallow, deep and spiral

- **'Shallow' scaling** is associated with the concept of superficial change or 'thin' learning, and can be instrumental or cognitive, vertical or horizontal. It may represent a response to a nudge, market mechanism, policy instrument or new information, but does not alter underlying values or worldview. It incorporates the idea of **behavioural contagion**, where humans copy and imitate the behaviours of their peers, both consciously and unconsciously, as exemplified by the increasing popularity of plant-based diets or the diffusion of rooftop solar panels in suburban areas (Bollinger & Gillingham, 2012). Conversely, it is apparent in many of the unsustainable behaviours that are driving the climate crisis, such as flying and the increasing popularity of sports utility vehicles (SUVs) in some societies. Shallow scaling also incorporates top-down infrastructural **de-scaling**, which curates the choice architecture through **choice editing**. This is achieved through the provision of services to shape behaviours in line with a desired outcome, such as reducing waste or the energy intensity of certain actions. It can involve a degree of lifestyle leapfrogging across contexts. Such an approach may be effective at shifting behaviours at scale, addressing both the demand and supply-side of the economy, but will not challenge the social values, norms and practices that underpin consumptive behaviour, risking rebound effects elsewhere in the economy. An example might be car-free cities, the pedestrianisation of city centres or the energiesprong housing insulation initiative in the Netherlands.
- **'Deep' scaling** occurs when behavioural change leads to a wider **social transformation** or paradigm shift (Kuhn, 1962). This happens when certain behaviours, values and norms become culturally and institutionally embedded, and socially acceptable or ostracised. Examples include equality and civil rights norms and legislation. Because social transformations are inherently context-bound, 'strong' global sustainability will require multiple, differentiated transformations across social, geographic and temporal contexts, operating on the same upward trajectory.
- **'Spiral' scaling** highlights the process of *transformation* from 'shallow' to 'deep' scaling as a dynamic sequence of interactive feedback loops between individuals, society, institutions and infrastructures. It envisages an iterative, reciprocal and reflexive social learning approach, and responds to the need to move away from linear and even circular understandings of scaling, towards multiple, deep transformations - i.e. *axial **behaviour** and **systems*** change across diverse contexts, which are conceptualised as an upward-moving vortex or 'spiral of sustainability'. This perspective aims to better reflect the empirical reality whereby elements of shallow and deep scaling often operate in tandem within and across contexts over time, until deep scaling prevails and transformation is achieved. This is inspired by O'Brien et al.'s (2013) 'axial revolution' for transforming education and capacity-building for global sustainability.

25 https://behavioralscientist.org/fight-climate-change-with-behavior-change/

Photo credit: Chris Barbalis, Italy.

thinking that can respond only marginally or slowly to social learning (nurture)". These are 'biological drives' that undermine rational decision-making.

Running through our inquiry was a discussion about how to square urgency with the depth and scale of behaviour change required. As Anna Birney, member of the commission, put it:

> **There is an inherent tension in social learning and transformation; that we do not have time to build the capacity for personal transformation and change. The process that a person might need to go through to get the depth of change required to really shift how they see and act in the world is just too long and the issues we are facing are too urgent for it to take that long. It can take time for individuals to shift their deeper paradigm and worldview.**

And yet, as Donella Meadows puts it:

> **There's nothing physical or expensive or even slow in the process of paradigm change [change in the shared idea in the minds of society, the great big unstated assumptions]. In a single individual it can happen in a millisecond. All it takes is a click in the mind, a falling of scales from the eyes, a new way of seeing.[26]**

"We don't have the time not to take the time"

Renée Lertzman

3

Understanding behaviour change

Photo credit: Adli Wahid, Kathmandu, Nepal.

What insights can we glean from the existing research on how best to scale behaviour change?

While many academics – including several members of the Commission – may agree to disagree over the means and merits of sustainable behaviour change strategies to achieve 1.5°C lifestyles, there is broad consensus that different theoretical approaches can help us to identify and tackle different pieces of the puzzle.

Nielson et al. (2020:23) explain, "the very traditions, methods, and theories that allow for high-quality research within a discipline can lead to ignoring factors not central to those traditions". Exploring how blind spots can be overcome by incorporating insights from multiple perspectives, can therefore help us to generate a portfolio of responses to sustainable behaviour change and allow access to a broader range of tools. As Commissioner Solange Alfinito points out, "in the same way you need to engage the whole of society, you need to engage in all methods", especially to understand the interplay between individual and system change.

To this end, we cast our theoretical net as widely as possible in order to inform our analyses of change, but principally draw on **four disciplinary perspectives**. The first two, *'nudge'* theory and (a cluster of) *psychological* approaches, take the individual as the basis for analysis. As they see agency as primary, they tend to be more optimistic about prospects for behaviour change. The second two, *sociology* and practice theories, and *political economy*, see systems as being critical contexts within which individuals operate, and therefore, behaviour is understood to be driven and circumscribed by social, political and physical structures, which are slower to evolve and harder to disrupt. Since we argue that individual *and* system change are required, we make the case for moving forward by combining these insights.

'Nudge' theory

The logical place to start looking at theories of behaviour change is with the so-called behavioural approaches, which focus on the observable and measurable aspects of human actions and responses. As mentioned above, psychologists tend to focus on the role of individuals and households, and as such, the discipline shares some of its basic assumptions with behavioural economics, whose object of analysis is generally **individuals** – or consumers. As Gifford puts it, "amelioration of that part of… climate change over which we have some potential control occurs at

the individual level" (2008:273). The focus then becomes enabling pro-environmental or climate behaviours through information, monitoring and metering (a mix of 'antecedent' and 'consequent' interventions (Capstick et al., 2015)). Behavioural economists refer to this as **'nudge' theory** (Thaler & Sunstein, 2009; Nature Human Behaviour, 2020), that is: making it easier to do the 'right' thing from the point of view of sustainability. According to Thaler and Sunstein, a nudge "is any aspect of the **choice architecture** that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives" (2009:6). By altering the choice architecture, optimal outcomes (in this case more sustainable behaviours) become more predictable, without infringing on one's individual liberty through manipulative means. Lehner et al. (2016) suggest that nudge interventions make use of four tools to alter the choice architecture: simplification and framing of information, which is the most commonly utilised for sustainability purposes (Thøgersen & Schrader, 2012); adjustments to the physical environment; changing default policies (Momsen & Stoerk, 2014) (around green electricity, for example (Kaiser et al., 2020)), and the use of social norms, such as initiatives that gamify recycling through neighbourly competition (John et al., 2013).

Nudge theory's focus on the choice architecture, or environment, in which decisions are made means it is reliant on a certain theory about the way in which all of us make choices and the ways in which our cognition enables those decisions. Daniel Kahneman, in his book *Thinking, Fast and Slow*, provided the theoretical underpinning for nudge interventions through his idea of decision-making being split into two systems (2011). System 1 operates almost automatically, with very little (or no) effort and no sense of voluntary control, using rules of thumb and other habit-based processes. System 2, however, pays attention to the more laborious mental activities, including complex computations, and the subjective experience of agency, choice and concentration – our conscious, reasoning 'self'. Kahneman purports that, despite System 2 being the realm of complex cognition, System 1 is where the majority of decision-making takes place and is therefore the target of nudge interventions. Due to this approach, critics have labelled it 'neoliberal' or 'soft paternalism' (Jones et al., 2011), due to its emphasis on the individualisation of responsibility, using "policy interventions to induce voluntary cooperation in social dilemma situations" (Nagatsu, 2015:481). Others have been harsher, accusing nudge interventions of being manipulative and open to government abuse (Hausman & Welch, 2010), entrenching the idea that economic rationality is the sole driver for decision-making (Berg & Gigerenzer, 2010) as well as potentially undemocratic (Goodwin, 2012).

In terms of the impact of nudge in practice, a considerable meta-analysis of (over three million) behavioural interventions to promote climate action in households found, "[t]he intervention with the highest average effect size is choice architecture (nudges)"; however, the authors were keen to stress that the effect of these measures were very short-lived – not lasting beyond the duration of the intervention – and also suggested that potential mitigation effects could have been more successful had nudges been used alongside other complementary strategies such as fiscal incentives or legislation (Nisa et al., 2019:1-2; Stern 2020) makes a similar point in defence of nudge when used as part of a package of interventions). But while the evidence shows that nudging individuals in the right direction can achieve a degree of success in changing behaviour – and has been credited, for example, with increasing the number of organ donations in many countries (Shepherd et al., 2014) – it is clear that its reach is generally confined to specific, simple and narrow contexts, and in spite of its omnipresence (think nutritional information on food labels and menus), not to mention likely under-reporting of unsuccessful campaigns, its capacity to effect behaviour change to date has been notoriously limited (Nature Human Nature Editorial, 2020).

One significant reason why nudge on its own may be destined to fail in certain circumstances is that it is poorly equipped to address countervailing psychological and systemic influences. For example, Nisa et al. (2019) found minimal change in household behaviour in relation to the purchase of energy efficient appliances and (private) car use, possibly because these are arguably areas where providers and intermediaries have strong incentives to maximise sales (Vandenbergh & Sovacool, 2016). Nudge efforts might also be subject to '**rebound**' effects, identified in the economics literature in relation to energy savings (see Box 4). As Sorrell et al. explain, "Improvements in energy efficiency make energy services cheaper, and therefore encourage increased consumption of those services. This so-called direct rebound effect offsets the energy savings that may otherwise be achieved" (2009:1356). For example, buying a more fuel-efficient or hybrid car might cause a driver to make longer or more frequent journeys (*direct* rebounds), and even spend the money saved on additional goods and services, such as a second

car (*indirect* rebounds). Some estimate that direct rebounds in certain sectors can be up to 30% (Sorrell, 2009) or higher, though others warn that in most cases "[r]ebound effects are small and are therefore no excuse for inaction" (Gillingham et al., 2013:476).

From a psychological perspective, a major deficiency in the effectiveness of nudge as a tool for behaviour change is that it fails to engage with the consciousness, attitudes, values or beliefs underlying a person's motivations for taking action in the first place (though this is not something that nudge approaches try to do). It is also a criticism levelled by sociologists, such as Burningham and Venn, who argue, "This framing ignores the extent to which everyday consumption is situated both within immediate family contexts and broader infrastructural and socio-economic settings" (2017:20). Instead, they highlight the importance of distinguishing between *motivations* for behaviour, which in the case of their study, ranged from reducing consumption for ethical reasons (frugality), to consuming less to save money (thrift) (Burningham & Venn, 2017:15, Jackson, 2005a,b). This distinction is significant because it affects the likelihood of rebounds occurring, if, for example, savings are spent on carbon-emitting alternatives.

However, given that we are seeking to urgently change embedded patterns across a range of behaviours and situational contexts (and not just instigate individual actions), it seems inevitable that we will need to look beyond nudge approaches. As Dolan et al. conclude, "the best interventions will certainly be those that seek to change minds alongside changing contexts" (2012:274).

Psychological approaches

To address nudge's shortfall in cognitive depth, we turn to social and environmental psychology, which (long before the inception of 'nudge'), has made considerable inroads into our understandings of how human behavioural responses can be used to promote climate mitigation policy, low-carbon action and adaptive behaviour, by emphasising the importance of perceptions and motivations.[27] Several books and papers provide useful overviews (Adams, 2016),[28] but at its core, psychological perspectives essentially see **values** (personal, guiding principles) and **identity** (how people define themselves) as the "building blocks of public engagement" (McLoughlin et al., 2019:16). Whereas public opinion and attitudes shift, surge and wane, values and identity tend to be more stable and consistent across contexts, which can be helpful in framing communications and targeting interventions to promote conscious change and embed low-carbon lifestyles – rather than simply triggering a collection of disparate pro-climate actions (Nash et al., 2017).

Certainly, psychological studies in the field of climate change have made considerable contributions towards our understanding of *scaling 'up'* or *shallow* scaling (see Boxes 2 and 3 above), by identifying targets and exploring the potential for behavioural change through specific interventions to improve the uptake of high climate-impact actions (Nielsen et al., 2020:25), often by highlighting individual and social barriers and constraints (information, financial, confidence, time, mobility, expertise), and indicating how they can be overcome (Atari et al., 2010; Lorenzoni et al., 2007; Dietz et al., 2009; Poortinga & Whitaker, 2018). One such barrier is what is referred to as **'solution aversion'** (Kay & Campbell, 2014), where people deny problems and the scientific evidence supporting their existence when they are averse to the solutions (inconvenient truths), evaluating the evidence in light of whether they interpret its policy implications as desirable or in line with their ideological beliefs. Solution aversion can be overcome via a variety of methods such as clarifying the solution to avoid misunderstanding, through affirmative action around the solution,

27 E.g. attitudes to risk, cognition, denial), values (Schwartz, 2012, Kasser, 2016; Crompton et al., 2014; Van den Linden et al., 2015), identity (e.g. virtue-signalling and 'conspicuous consumption' (Frank, 2020), emotional responses (such as guilt and shame), and wellbeing (Dittmar et al., 2014; Clayton & Manning, 2018; Brown & Kasser, 2005)

28 A Task Force commissioned by American Psychological Association explored psychological perspectives on climate change, including perceptions, causes and consequences (2008), and led to a special issue of American Psychologist in 2011, which Clayton & Manning (2018) subsequently built upon. Other useful overview papers include Swim et al., 2011 and Nielsen et al., 2020. With regard to energy early insights came from Stern and Gardner (1981).

reward substitution to incentivise action in spite of solution aversion, ideological affirmation to avoid polarisation and changing the solution (although this is very difficult in addressing climate change).[29]

Another area where psychology offers a platform for *scaling 'up'* (or *shallow*) behaviour change is by harnessing positive '**spill-over**' effects (also referred to as 'catalyst' or 'wedge' behaviours). This operates rather like a foot in the door or first rung on a ladder of engagement, by assuming that one relatively simple, targeted eco-behaviour can lead to another (e.g. recycling at home leading to recycling at work), which may, in principle, result in more radical structural changes over time, especially if behaviour spills over into social and political realms, and causes *scaling 'out'* or even *deep* scaling (Defra, 2008: 22; Nash et al., 2017; Thøgersen & Ölander, 2003). For example, a study in Maine, USA, found that engaging in everyday 'green' behaviours, made residents more likely to support wind power expansion, even controlling for their interest in environmental concerns in the first place (Thøgersen & Noblet, 2012).

However – and this is a big caveat – it is important to note that reviews of interventions targeted at pro-environmental spill-overs have overall found them to be relatively ineffective for a variety of reasons (Maki et al., 2019; Capstick et al., 2015; Thøgersen & Crompton, 2009; Abrahamse et al., 2005; Truelove et al., 2014). What has become increasingly evident is that using economic (extrinsic) rationales for action in interventions to promote environmentally conscious behaviour produces limited results and can even lead to **negative spill-overs** (Bolderdijk et al., 2013), which in psychological terms are equivalent to rebound effects. For example, Commissioner Lorraine Whitmarsh explains that the introduction of the plastic bag charge in the UK, although successful in drastically reducing the number of single-use bags being purchased, did not lead to further pro-environmental behaviour changes or broader efforts to tackle waste, possibly because it was presented as economic policy (appealing to extrinsic values via a price signal) rather than an ecologically-motivated action (reinforcing intrinsic values).

This relates to another concept associated with negative spill-overs: **moral licensing,** whereby one environmentally - 'virtuous' action (such as reusing or recycling plastic bags) may be used to justify other unsustainable behaviours (such as buying heavily packaged items) (Zhong et al., 2010).

Scaling behaviour change is therefore far from straightforward.

At the same time, other research has shown that by targeting **motivation** and conviction, rather than (only) providing information or exercising coercion, individual actions can trigger *further* eco-behaviours (Barr et al., 2010; Thøgersen, 1999; also see the CAPSI project), though admittedly, this is most evident in people who already express environmental concerns. Other factors found to affect the likelihood of achieving positive spill-overs are attitudes and **identity**. As mentioned already, those identifying as 'green' are more likely to demonstrate eco-friendly behaviour (Whitmarsh & O'Neill, 2010), which can be particularly pronounced with respect to high-cost actions (Gneezy et al., 2012). They are also likely to place greater emphasis on **intrinsic values** (self-transcendence and altruism), than **extrinsic values** (self-enhancement and materialism), and experience higher levels of wellbeing.

These connections between **wellbeing** and intrinsic values offer a promising hook for sustainable behaviour interventions, albeit tempered by the current dominance of consumerism, as Kasser relates in Quote Box 2 (which we return to in Section 5). Not only is **materialism** found to be negatively associated with pro-environmental attitudes and behaviours (Hurst et al., 2013), as well as significantly associated with lower wellbeing (Dittmar et al., 2014), but even when individuals don't identify as 'green' as such, evidence suggests that engaging in pro-environmental behaviours can be sufficient to create positive associations with wellbeing (Kasser, 2017).

Quote Box 2: Promoting intrinsic values

"Successful interventions [should] encourage intrinsic/self-transcendent values/goals, increase felt personal security, and/or block materialistic messages from the environment. These interventions would likely be more effective if policies were also adopted that diminished contemporary culture's focus on consumption, profit, and economic growth."

(Kasser, 2016:489)

29 https://bppblog.com/2018/03/27/solution-aversion/

This evidence of conflicting motivations, values and identities, often pulling in different directions, also demonstrates that presenting the **co-benefits** of low-carbon actions can be an effective way of appealing to diverse motivations across the value spectrum, and may go some way towards mitigating against the attitude-behaviour and intention-action gaps that have long confounded academics, policymakers, NGOs and green marketeers, whereby individuals report eco-consciousness, but fail to act correspondingly (van Basshuysen & Brandstedt, 2018; White et al., 2019a; Johnstone & Tan, 2015; Kollmuss & Agyeman, 2002). Encouragingly, Bain et al. (2015:1) found that by presenting the co-benefits of 'development' (understood here as 'economic and scientific advancement') and 'benevolence' ('a more moral and caring community') in promoting actions to combat climate change, people across 24 countries were motivated to engage in private, public and financial activities to a similar degree, whether or not they were convinced about the validity or importance of climate change itself. The study concluded,

"Communicating co-benefits could motivate action on climate change where traditional approaches have stalled"
(Bain et al., 2015:1).

Priming also has the potential to motivate environmentally conscious behaviour, by activating intrinsic values at the point of choice. A study exploring consumers buying fresh produce in Denmark and Brazil found that in both countries (known to have diverse cultures and markedly different levels of organic market penetration), priming for normative goals resulted in greater importance being placed on purchasing organic food, and also reduced consumer requests for a perfect product appearance (related to hedonic goals), which may support attempts to reduce food waste (Thøgersen & Alfinito, 2020).

*Furthermore, experiments conducted by Bauer et al. (2012) found that invoking '**citizenship**' rather than consumerism, led to decreased orientations towards materialistic concerns, whilst exposure to consumerist cues was associated with reduced interest in social involvement, greater competitiveness, and lower feelings of responsibility.*

As Kasser points out,

> **all of us have materialistic tendencies… researchers need to ask not only, "Who is materialistic?" but also "When are people materialistic?"** (2006:506).

For this reason, understanding that people are conflicted and fallible, and reminding them how their actions relate to their values, clearly has a part to play, especially given that materialistic priming – via marketing, sponsorship and advertising campaigns – remains ubiquitous in most societies.

Just as behavioural psychology has extensively informed communication and marketing strategies (UNEP, 2005), what seems particularly pertinent in today's increasingly polarised political and social media climate is that effective **framing**, messaging and modelling will be key to delivering sustainable behaviour change at scale. Lessons we can draw are, first, that the **source** is as important as the content of the message because information will be filtered by political and social allegiances (White et al., 2019b). When people are actively deliberating a choice and engaging in decision-making, they seek information from sources they **trust**, i.e. those they share common values with (friends, family, neighbours) or from independent/formal sources they consider to be objective and competent (e.g. health professionals, NGOs, teachers, scientists). **Modelling** can also be influential, particularly from socially-relevant, aspirational figures, who can demonstrate, and help rewrite what is understood to be 'the done thing' (e.g. celebrities, entertainers, social media influencers, sports personalities, religious leaders) (Gächter & Renner, 2018). Finally, **proximity** to others can also lead to scaling by social contagion (see Box 3 earlier), as has been found to be the case in the uptake of solar panels and electric vehicles in local neighbourhoods (Frank, 2020; Bollinger & Gillingham, 2012; White et al., 2019b).

Thus, to shift from unsustainable living to low-carbon lifestyles, we might utilize '**norm entrepreneurs'**. To change norms, we need to change both what people are doing (social norms) and what people believe others think they should be doing (the norm expectations) (Bicchieri & Mercier, 2014). Individuals and groups can work to shift social norms towards a low-carbon lifestyle by visibly practicing and clearly articulating a set of sustainable behaviours. Additionally, new research about dynamic norms - norms that are shifting - indicates that by articulating a changing or trending norm, we can help speed up the rate of change and thus the movement towards normalizing sustainable living (Sparkman & Walton, 2017).

A further – and potentially significant – route to maximising the reach of behaviour change stems from the understanding that individuals not only hold multiple values simultaneously, but also assume **multiple roles** and operate across **spheres of influence**. By thinking of behaviour in these broad terms, the impact of individual agency can be extended well beyond the sum of a person's discrete actions, and be amplified across families, friendship circles, workplaces, social and religious groups, schools and learning institutions, leisure and sports clubs, NGOs, corporations, and other organisations and networks (Tosun & Schoenefeld, 2017). As Commissioner Stuart Capstick explains,

"If we can think of behaviour in expansive terms, then there are lots of different entry points into the system via our different roles (everyday decisions and consumption, influencing those around us, advocating for change, working in new ways). We can exert influence formally and informally, and also via coalitions."

The Sitra report by Impiö et al. (2020) demonstrates this potential, by calculating not only the carbon footprints of fictional individuals, based on their lifestyle-archetype profiles, but interestingly, also describes and quantifies the spill-overs corresponding to their pro-eco behaviours in terms of emissions saved, which they call, '**carbon handprints**' (see Quote Box 3). This touches on several of the scaling approaches and drivers identified in Section 2, including *scaling up, scaling out,* and *shallow scaling* through contagion.

Quote Box 3: Carbon 'handprints'

"To enable systemic change and to escape the solely individualist point of view that often distorts low-carbon lifestyle studies, we describe here the carbon handprint people may have. By carbon handprint we mean positive actions that extend beyond one's own lifestyle, actions that help other people or the whole of society to reach the 1.5-degree target. These include consumer, civic and political activities, such as the choices people make at school, at work, while practising hobbies, while shopping, online and on the street."

(Sitra, 2020)

In her work, Commissioner Frances Westley takes the concept of agency-reach further still, by emphasising the role individuals can play as '**institutional entrepreneurs**', with the capacity to drive sustainability innovation strategies by eroding the resilience of dominant institutional systems and presenting, "viable shadow alternatives and niche regimes" (Westley et al., 2011:762). She expands, "Key persons can play pivotal roles in such learning processes including providing leadership, building trust, developing visions, and sense-making. These individuals can be important brokers for connecting people and networks and also play a key role as nodes in learning networks" (Westley et al., 2011:771).

Research also offers pointers about psychological devices to avoid (or use with caution) when pursuing behaviour change. Several Commissioners explained that although **shame** and **guilt** were often invoked in environmental campaigns and advocacy, such strategies were likely to prove counterproductive in the long-term. Whilst shaming may make instigators feel better about their own 'virtuous' conduct (and may even demonstrate a degree of success, as Commissioner Leo Murray points out in the case of 'flight-shame'/*flygskam* and 'train-brag'/*tågskryt* in Scandinavia), it does not necessarily induce positive behaviour change in the targets of shaming when used as an externally driven strategy.

Indeed, shame can become a form of virtue signalling rather than a motivator for generating positive social change. As Commissioner Jennie Moore put it, "If you make people feel bad, you have lost them." Commissioner Whitmarsh also explains, "Negativity only works under specific conditions – that is, settings where [three conditions hold]: (1) people are at risk, (2) changing their behaviour can help to reduce that risk, and (3) an action is presented as a way to help them mitigate or avoid that risk." Therefore, its use is generally confined to public health and safety campaigns (e.g. seat belts, smoking, drink driving). Instead, she emphasises that "communicating efficacy is important. Not just fear." This ties in with related research proposing the use of more empowering cues, such as telling a **positive** story, projecting **self-efficacy,** and highlighting **co-benefits** – such as health, wellbeing, and community cohesion (McLoughlin et al., 2019).

Although disciplinarily distinct from psychology, psychoanalytical and psychosocial perspectives also show that there are more profound opportunities for engagement in sustainable behaviour change via **dialogue** and **connection**. Commissioner Renée Lertzman argues there is

a need to look beyond subjectivity, and instead reframe behaviour change as '**meaning change**', whereby meaning and relationships are seen as key entry points for broader social change. By this account, the unconscious human mind is understood to be **conflicted** and messy, affective and defensive. Therefore, too narrow a focus on values fails to acknowledge the internal struggles and barriers people face in trying to live by their values and reconcile the contradictions of sustainable living (also Lertzman, 2014:3).

Climate anxiety can cause overwhelm, **denial** and disavowal, which can lead to anger, paralysis and a suspension of reality, which prevents people from acting creatively and engaging in problem-solving: something we have seen all too clearly in public debates about climate change and sustainability. Commissioner Sally Weintrobe expands, "it is not [only] about individuals, but rather a *mindset*." Meanwhile, Adams goes on to lament, "Despite increased knowledge, the populaces of wealthy nations appear to be outwardly ignoring such risks, continuing their consumption patterns unabated, and failing to mount a significant public response" (2013:52). In order to break the impasse, and address the "social organisation of denial" (Adams, 2013), psychoanalysts advocate **safe spaces to talk about lifestyle**, and call on political leaders to communicate and behave in a way that models and nurtures a 'culture of care' (Commissioner Sally Weintrobe), and fosters 'attunement' with people's collective trauma and grief (Commissioner Lertzman). From a psychotherapy perspective, creating inclusive and dynamic spaces to hold difficult conversations will be key,[30] and as Lertzman concludes,

"By listening more deeply and focusing on ***invitation****, versus persuasion and fear-based appeals, we can build deeper coalitions and collaborations that cross political and ideological boundaries."*[31]

This raises challenges of collective psychology: a broader cultural developmental process. It is at this deeper level that it is perhaps hardest to engage and change, but where the most profound and lasting change can come: via shifts in values and worldviews, and by accepting and attuning to the messy nature of reality, which informs so many aspects of our lives, as Anna Birney expresses in Quote Box 4:

Quote Box 4: Scaling through depth

"Changing individuals at the level of values and self-perception — at the level of their worldview — results in people cascading multiple changes in their behaviour. Behaviours take care of themselves. People fly less, eat less meat, recycle more, reuse more etc. They don't need to hear and be exposed to individual campaigns and messaging for change to happen in these areas. To achieve the goal of sustainable lifestyles, it is more efficient and powerful to shift at the inward, worldview level, not the outward, behavioural level. Change the story. Change the person. Change the behaviour."

Boundless Roots Community (Birney, 2020)

Sociology and social practice

Having begun with an analysis of behavioural approaches associated with 'methodological individualism', we move on to explore how **systemic** theories understand and elucidate behaviour change. We turn first to sociological approaches, which Evans and Jackson (2008:4), claim, "can add an invaluable level of depth and sophistication to understandings of consumer behaviour and the complexities underlying the challenges of 'lifestyle change'."

While studies from this perspective have been notably less numerous compared to those from the behavioural sciences, by these accounts, social and physical structures are understood to be woven together via webs of understandings, often strongly derived (and perpetuated) by **culture**, and co-determined by norms, objects, symbols, **identities** and **practices**, which give meaning to life (Jackson, 2006). By focusing too much on individual behaviours, they argue, we fail to sufficiently account for these complex social and cultural processes (Sovacool & Griffiths, 2019; Stephenson et al., 2010), as well as physical and

30 Reference Carbon Conversations. http://www.carbonconversations.co.uk/p/about.html
31 https://reneelertzman.com/book/

economic 'lock-in' (Unruh, 2010; Sanne, 2002). As Warde (2014:284) explains, "Against the model of the sovereign consumer, practice theories emphasise routine over actions, flow and sequence over discrete acts, dispositions over decisions, and practical consciousness over deliberation."

In relation to sustainable lifestyles, behavioural approaches also neglect what Shove (2003) calls the "social organization of normality", whereby **social** and **infrastructural** factors produce certain patterns of demand, which correspond to the **normalisation** of (unsustainable) **habits**, routines and everyday practices of consumption, for example, around washing, showering and laundry, as well as travel and heating. Therefore, by tackling the systemic conditions and drivers of these practices, we can potentially reconfigure systems in a more sustainable way.

In this sense, sociological and social practice hold great promise in understanding the **enabling conditions** for achieving sustainable lifestyles by analysing the reverse: the systems, infrastructures and cultures that produce and reproduce unsustainable consumption. By providing the analytical scope for capturing many of the scaling approaches introduced in Section 2, sociological theories present a comprehensive framework for understanding systems change, synthesising not only perspectives of *scaling up* and *scaling out*, but also *deep scaling* via shifts in normative frames of reference, practices and physical systems, which will be necessary to create new patterns - and possibly even new paradigms - of sustainable behaviour. As Giddens explains, consumption choices in today's complex world are not one-stop, quick-fire actions, but rather relate to deeper **self-identity**, and represent, "decisions not only about how to act but **who to *be***" (1991:81, emphasis added). This need to express self-identity in consumerist cultures via predominantly materialistic means (earning more to spend more), represents one of the biggest challenges for achieving sustainable behaviour change, and explains why green consumerism has provided such a successful placeholder or proxy for those seeking to improve their eco-credentials without the need to step out of the prevailing acquisitive growth paradigm against which they will most likely be judged. This can also leave behaviour change initiatives open to the 'performative behaviour' trap identified by Commissioner Manisha Anantharaman (Quote Box 5):

Quote Box 5: The 'performative behaviour' trap

"Too much of behaviour change work has become about performative behaviour with cultural and sociological markers about what sustainable living 'should look like'."

(Commissioner Manisha Anantharaman)

It also raises the question of how to create a counterculture to consumerism, when its reach is so pervasive. This has brought a renewed focus from scholars within the discipline on inequality and excess consumption (Evans, 2018; Dietz el al., 2020; Urry, 2010). As Evans and Jackson explain,

"Consumerism is best understood as a cultural condition in which economic consumption becomes a way of life. It is a state of affairs in which more and more cultural functions are handed over to the activity of consumption such that it colonises more and more aspects of human experience."

(2008:6-7)

Therefore, as long as consumerism, materialism and economic growth continue to enjoy cultural supremacy, and until they are replaced by more sustainable and self-transcendent frameworks of meaning, such as wellbeing and sufficiency (more on this in Section 5), it will be an uphill struggle to divert behaviours in a sustainable direction without an alternative to replace it with. To this end, Dietz et al. (2020) propose that sociology has a role to play in unpicking the **contextual conditions** driving variations in GHG emissions between and within countries (macro), corporations/social actors (meso), and individuals (micro), to gain a better understanding of what drives some actors to act differently under similar social, political and economic institutional conditions. Further, they point to the utility of sociological approaches for exploring **intersectionality**, that is, how the interplay between social and political identities, such as gender, class, disability, race, sexual orientation affect **climate justice**, i.e. "the concern that the causes and consequences of climate change, and the impacts of efforts to reduce the magnitude of climate change and adapt to it, are inequitably distributed", as exemplified by the differential impacts of Hurricane Katrina in 2005, and the Amazon rainforest fires in 2019 (Dietz et al., 2020:144).

Turning for further guidance to practice theory, **social practices** are understood to consist of three elements: *materials* (tools, technology, infrastructure), *meanings* (values, symbolism, identity), and *competences* (knowledge and skills) (Shove et al., 2012; Shove & Spurling, 2013). Shove suggests, therefore, that it is misguided to exogenise social structures and contextual factors in behavioural models (based on choice) because practice plays such a key role in the expression of values and, at the same time, in perpetuating them (2012:1279). The two approaches are therefore perceived to be incompatible, as behavioural choice models accord such a high degree of agency to individuals, arguably resulting in ineffective policy interventions that focus on influencing choice at the expense of more "**historically grounded analyses** of how relevant social practices, systems of practice, and related infrastructures and institutions evolve" (Shove, 2012:1280). This interpretation also stresses the co-production of consumptive practice, "consumers and producers are both involved in constituting and reproducing practices, the successful accomplishment of which entails specific forms of consumption" (Shove & Pantzar, 2005:62).

Shove believes that the dominant A(ction), B(ehaviour), C(hoice) paradigm has been so successfully sustained in governance and policy discourses because it serves the needs and interests of policymakers to put responsibility for action (and inaction) primarily at the door of individuals, rather than questioning the institutions and systems that sustain it (2010:1283). As applied to sustainable behaviour research, she warns against assuming that evidence of apparently successful interventions in one sphere (e.g. on smoking, littering, seat belt use) is necessarily transferable to other contexts (citing the approach of the UK's DEFRA and Department of Transport in the mid-2000s), which may result in misguided policy and outcomes (also see Burningham & Venn, 2017:20). Instead, improving the sustainability of mobility, diets, and energy use in society requires directing attention to the multiple and interrelated social practices embodied by these actions. Shove (2010) argues that a promising way forward would be to reorient research towards understanding the **social context** in which unsustainable actions occur (also see Batel et al., 2016). She suggests that greater academic and policy attention be paid to the evolution of **'envirogenic' environments**, which would result in more self-reinforcing sustainable behaviours, and cites the success of the more holistic approaches taken in public health and urban planning spheres to tackle obesity, where diet and exercise are understood to be shaped by social, institutional and infrastructures, as well as reflected in broader "patterns of time and mobility" (Shove, 2010; also see Egger & Swinburn, 1997).

Despite the undoubted capacity of social practice theory to, first, help identify barriers to scaling, second, capture the complexity of relationships between social and physical structures, and, third, offer a comprehensive framework for evaluating the shortcomings of behavioural interventions, the *practical applicability* of the approach for informing policy has been criticised for offering little more than general advice to "tak[e] social norms a bit more seriously as influences of behaviour" (Jackson, 2005b:63). Further, its limitations in helping shape the precise design of target interventions have also been highlighted, given that so little is yet understood about the evolution and dynamics of social practices. Evans et al. (2012), however, firmly rebuff this critique by presenting a series of "emergent programmes of practice-based interventions" in the housing, food and mobility sectors, summarising that successful programmes need to be coordinated, attentive to webs of practice, and adaptive (see Quote Box 6).

Quote Box 6: Social practice and behaviour change policy

"Crucially…there is a need for programmatic policy responses that are co-ordinated, consistent and focused on specific sets of interrelated practices. Allied to this, it was suggested that these programmes should be flexible enough to adapt to the dynamics and contingencies of practices (and interventions) as they unfold."

(Evans et al., 2012:127-8)

Commissioner Manisha Anantharaman also points to the fact that, as a theory, social practice has a flat ontology: "it doesn't have a good way of thinking about power and hierarchy relations". She goes on to describe the context of food practices in India, where domestic activities invariably involve power relationships between domestic helpers and household owners, which impact on food provisioning, preparation and consumption. She asks, "How do we conceptualise these power-laden relationships and the way in which they impact on what types of behaviour takes place?"

Taking an integrative theoretical approach may, therefore, be a potential way forward. Indeed, despite coming from a predominantly psychological disciplinary perspective, Nash et al. (2017) argue that social practice theory has the potential to improve understandings of how to foster sustainable lifestyles, and highlight the value of paying greater attention to social norms in generating climate-conscious spill-over behaviours, specifically, "via carriers of practice, materiality, and through relationships between practices within wider systems of practice" (2017:1).

Furthermore, several Commissioners with psychology backgrounds mentioned that promising and effective methods for behaviour change have been developed and applied in the habit literature on public health (Verplanken et al., 2008; 2018). Commissioner Lorraine Whitmarsh explains, "Some of the work in the habit literature in psychology overlaps with social practice theory in as far as they agree that what we do is based on context – where we are, and who we are with. There are helpful intersections to explore here." This was echoed on the sociological side by Commissioner Kate Burningham, who points out that although psychological approaches focus on the features of the immediate environment in which behaviours are habitual, there are important linkages with sociological practice, which explores the broader elements of social and structural environments in which practices are normalised (also see Southerton, 2013; Darnton et al., 2011).

Political economy

Though there is some common ground with sociological approaches, political economists argue that approaches to consumption from economics, sociology and psychology tend to "ignore structural elements of the problem grounded in political and economic systems" (Princen et al., 2002:ix), where economists equate consumption with the 'demand function' and sociologists as an expression of identity and search for meaning in modern society (Giddens, 1991). From this perspective, consumption is viewed, "not just as an individual's choice among goods, but as a stream of choices and decisions winding its way through the various stages of extraction, manufacture and final use, embedded at every step in social relations of power and authority" (Princen et al., 2002:12). In sum, as Commissioner Doris Fuchs put it, "to change behaviour, we need to change structures".

Traditionally, political economists often focus on production (and struggles over who controls it) as the root of social change and are often critiqued for their reductionism and neglect of questions of culture, despite advances in cultural political economy (Jessop, 2010). They tend to view consumption largely in relation to the role of debt and crises of under-consumption for growth in a capitalist society. In relation to socio-technical transitions, there is an emphasis on 'lock-in' (Unruh, 2000), as well as cultures of consumption (Princen et al., 2002; Dauvergne, 2008) that fuel and sustain consumption through (among other things) Fordist production models which require mass consumption, or more recently debt-fuelled spending, and the role of advertising in sustaining demands that are unsustainable from an environmental point of view.

As political economists, they are alert to the challenges that attempts to check consumerism face. Maniates notes, for example, "advertisers have the full weight of Western liberal tradition in their corner. To be anti-advertising is to be anti-democratic, if not anti-market" (2002:207). Part of scaling behaviour then is also about how to un-scale and descale unsustainable behaviours. Capstick et al. (2015) suggest, for example, that a more radical approach to reducing personal emissions in line with the sorts of parameters described above would need to challenge dominant norms and givens in (capitalist) society. For example,

> **to deliberately promote reduced consumption as a means of lowering people's embedded carbon emissions … immediately collides with powerful and deep-rooted political and economic assumptions about the importance of consumer spending as a means of driving economic growth. Indeed, the paradigm of economic growth is itself used as a proxy for societal wellbeing (Capstick., 2015:7).**

This speaks to a much deeper political economy challenge around the very function of the state in a capitalist society: to reproduce the conditions for the expansion of capital, even if that means increasing social inequalities and environmental degradation. Fuelling growth through advertising and consumer spending is central to this way of organising the economy. From this point of view, therefore, individual behaviour change is insignificant when set against the need for 'de-growth' (Kallis, 2018; Hickel, 2020) and structural change in the very purpose of economic activity away from growth as the *means* and *end* of state policy, as opposed to prosperity or wellbeing for instance (Jackson, 2011). Given the level of power

Photo credit: Scott Evans, Guildford, UK, 2020.

of incumbent actors this is not an easy undertaking (Fuchs et al., 2019). Nor does it sit easily with the need for rapid change. Indeed, political economists are often far better at accounting for why things *do not* change, than how and when they can (Newell and Simms, 2020).

In terms of **global political economy**, though many of these connections are often under-explored, attention would focus on the global and historical patterns of exchange, extraction and uneven development which underpin contemporary inequalities in consumption and their ecological consequences (Newell, 2021). These relate to historical inequities and patterns of colonialism aimed at extracting resources and wealth for the benefit of the Global North, but which persist through unfair terms of trade and patterns of regulation and global governance which lock-in privileged market access for mobile transnational companies (Newell, 2012). Hence the 'cheap' oil, cotton or meat which features highly in the consumption patterns of the polluter elite can only be consumed on a large scale, and is under-priced in social and environmental terms regarding the costs it passes on to society and the ecosystem, because of structural inequalities which, according to this view, need to be addressed as part of a broader project of transforming the economy away from its current destructive path.

Where such approaches are useful is in pointing to the need to disrupt power relations and get to the roots of unsustainable consumption by addressing economic policy, the conduct of elite politics, the power of advertising and so on. Many scholars working on behaviour change within this tradition attend to the intrinsic links between sustainable production and consumption, including the work on sustainable production and consumption by Lorek, Fuchs and Akenji reviewed above. They also tend to place more emphasis on the role of social movements as the disruptors of consumer culture and the sites of alternatives. This can be through protest against particular products or business practices, the co-production of 'civil regulation' of the private sector through codes of conduct, certification and the like (Newell, 2001) or building of alternatives as 'prosumers' get involved in community energy production and local food networks, for example (Seyfang, 2006).

The focus is often the system, rather than the individual, however. For example, applying a political economy analysis to a systems provision approach, Mattioli et al. (2020) show that research on car dependence often lacks analysis of the political-economic factors underpinning car-dependent societies - which include the power of the car industry, the provision of car infrastructure over affordable public transport, the political economy of urban sprawl and cultures of car consumption (Paterson, 2006; Böhm et al., 2006). These, they argue, are crucial elements to the maintenance of car dependence and the reproduction of carbon lock-in (Unruh, 2010).

A final contribution of political economy analysis to understanding sustainable behaviour change is to provide an account of **historical precedents** of large-scale shifts in behaviour, including ones initiated and enforced by the state. For example, Newell and Simms (2020:11) argue that "When they choose to do so, states can play a proactive role in dramatically and rapidly shifting cultural practices". Dramatic levels of resource conservation during the Second World War were achieved by rationing around household waste reduction, the conversation of land from livestock to cereals and the establishment of 1.7 million allotments to encourage people to 'dig for victory'. They suggest, "Amazingly, from today's standpoint of rampant mass consumerism, efforts were invested by the state in de-legitimising wasteful consumption" (Newell and Simms, 2020:12). Railway companies advertised that needless travel is a crime.

The Railway Executive Committee produced a poster which read 'Is your journey really necessary?', while the UK Ministry of Fuel and Power appealed to people not to 'squander electricity' and to 'save fuel', 'mend, sew, repair.' In the USA, the Food Administration urged citizens not to 'waste food' and issued a list of instructions about how to do it which included: "buy it with thought, cook it with care, use less wheat and meat, buy local foods, serve just enough, use what is left".

In the UK, between 1938 and 1944, a complete revolution in consumption patterns was devised, implemented and the broad-based engagement of the population secured. Behaviours towards food, fuel, transport and civic engagement altered rapidly. Andrew Simms suggests that apart from some well-known privations, an outcome of the rapid changes was not just a successful reduction of consumption and equalisation of access to resources among the population, it also saw a dramatic improvement in general health, life expectancy and infant and maternal mortality (Simms, 2013).

Political economy approaches would point to the need to **bring back the state** into the debate about sustainable behaviours, as the only institution with a specific mandate and the means to advance and protect the public interest. This would be a broader project of recommoning: to socialise control over the provisions of key services that has been ceded to the private sector under neoliberalism. In this view, legislative and regulatory frameworks provide the policy context within which individual and institutional actions can be most effective. As Commissioner Bill Rees put it:

> **Much 'heavy lifting' will have to come in the form of major government intervention in the economy on behalf of the common good. I, as an individual, cannot implement the necessary carbon taxes or cap-and-trade systems, other waste charges, resource depletion taxes and rationing schemes. Nor can I provide better urban public transportation or national energy strategies. You, as an individual cannot ensure fairer wealth and income tax regimes needed to ensure a just transition to a sustainable state. Unsustainability is a *collective* problem that demands collective solutions in the form of whole-society change. We must both re-insert the notion of 'public interest' into the political debate and re-assert the legitimate role of government responding to broad societal values as bulwark against unwarranted incursions of the private sector into the global commons.**

Before moving on to explore *Levers for change* in more detail, we stay within the political realm to take a brief look at relevant perspectives from environmental governance, political science and political sociology, as a means of pulling together some of the threads identified in this chapter regarding how to bridge individualist and systemic approaches.

To turn first to environmental governance, the idea of ***'polycentric'* climate governance**, associated with the late Elinor Ostrom (2010), suggests that the number of actors engaging in climate action has proliferated in recent years, partly in response to the slow progress of the global climate regime, but also because global climate initiatives, such as the Paris Agreement itself, have more recently called for the increased participation for non-state and sub-national actors (Hale, 2016). This has created **new levels and entry points for engagement** whereby,

> **Each unit within a polycentric system exercises considerable independence to make norms and rules within a specific domain (such as a family, a firm, a local government, a network of local governments, a state or province, a region, a national government, or an international regime. (Ostrom, 2010:552)**

This increases scope for informal, non-state actors to complement - as well as provide an alternative (radical) track - to more formal, state-led governance processes due to their: flexibility; capacity to self-organise locally; scope for building trusting relationships; potential for experimentation and innovation; and ability to incorporate feedbacks through experiential learning (Jordan et al., 2018; Bulkeley et al., 2014).

The role of polycentric governance in supporting sustainable behaviour change is also identified by Sovacool and Martiskainen (2020) in their case studies exploring 'rapid and deep' transitions in household heating systems in China, Denmark, Finland and the UK. They find,

"political and governance architecture can be just as salient as technical innovation and development in stimulating transitions,"

identifying six features of polycentric governance common to helping facilitate change in their four cases: **equity** (sharing costs and benefits); **inclusivity** and local involvement; integrating information and **feedbacks**; enhancing ownership and **accountability** (of producers and users);

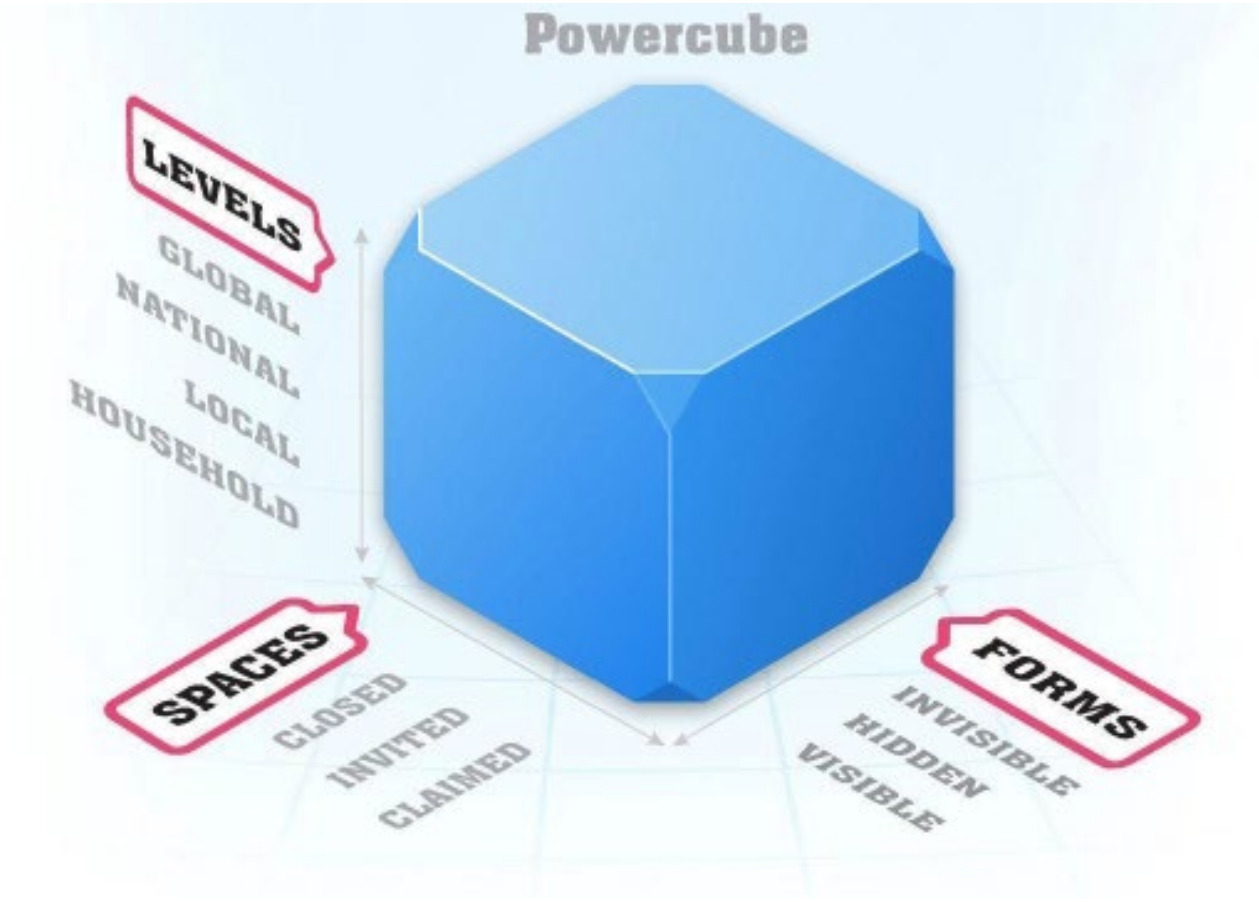
involving **multiple *stakeholders*** with overlapping responsibilities across scales; and building experimentation and **flexibility** into the process (Sovacool & Martiskainen, 2020:1).

Conceptually, governance and institutions, therefore, offer a way of **bridging the gap** between the agency of individuals and supremacy of structures because they highlight the role of *informal* institutions (e.g. networks, social groups, implicit norms and practices), and explore how they interact with, and co-constitute, *formal* ones (such as laws, rules and procedures). The utility of taking an institutional approach is also evident in the fact that the concept has been used (albeit with different emphases) in political science, political economy, sociology and anthropology (Hall and Taylor, 1996; Schmidt, 2008; Cleaver & De Koning, 2015). It also provides a promising way of examining how ecosystems of transformation can operate as **webs of interconnections**, linking actors with systems via **formal and informal institutions**, across multiple arenas and levels. Indeed, the concept of 'institutional work', "focuses on the role of actors in creating, maintaining, or disrupting institutional structures" (Beunen & Patterson, 2019:12).

Returning to a political economy perspective, however, it is clear that the best prospects for *deep scaling* behaviour change will lie not only in reconfiguring existing relationships and structures, but also entering and occupying the closed, hidden and empty spaces between them as a way of disrupting and reshaping the asymmetric power structures driving reliance on fossil fuels, consumptive materialism and unsustainable lifestyles.

To this end, we close the chapter by presenting Gaventa's 'power cube' (see Figure 2), which re-integrates notions of power, and presents a visualisation for the interrelationships between *spaces*, *levels* and *forms* of power, and in doing so, offers a useful framework for civil society actors to strategically "begin to assess the possibilities of **transformative action** in various political spaces" (2006:25).

Figure 2: Gaventa's 'power cube': the levels, spaces and forms of power



Source: Reproduced from www.powercube.net

Photo credit: Markus Spiske, Nürnberg, Germany, 2019.

First, the model illustrates that levels of engagement can be *household, local*, *national* or *global*, as per the first side of the cube. Second, the 'space' where engagement takes place can be a *closed* or *invited* institution, i.e., a political or social channel, discourse or practice, where terms are likely to be stacked against newcomers - or interestingly, they can be *created* spaces, which Gaventa argues provides alternative 'third' spaces, "where social actors reject hegemonic space and create spaces for themselves" (Gaventa, 2006:27). Finally, drawing on Lukes (1974), Gaventa identifies three *forms* of power: (1) *visible* power, which is accessible to a plurality of interests, usually exercised in formal political arenas; (2) *hidden* power, only available to privileged interests who control the agenda and mobilise bias (e.g. fossil fuel industries, polluter elites); (3) and *invisible* power, which achieves willing acquiescence from people by "dominating ideologies, values and forms of behaviour," using processes of socialisation, culture and ideology to define what is appropriate and acceptable (Gaventa, 2006:29). Operating in all of these '3 x 3' dimensions is necessary to to achieve transformation, as Gaventa explains,

> **Transformative, fundamental change happens, I suggest, in those rare moments when social movements or social actors are able to work effectively across each of the dimensions simultaneously, i.e. when they are able to link the demands for opening previously closed spaces with people's action in their own spaces; to span across local and global action, and to challenge visible, hidden and invisible power simultaneously. Just like the Rubik's cube, successful change is about getting each of the pieces on each dimension of the cube to align with each other, simultaneously. (Gaventa, 2006:30)**

Clearly, many aspects of this model chime with the different theoretical perspectives we have introduced above. At the risk of caricature, economic and psychological behaviourists tend to operate where actions and arenas are more visible; sociologists emphasise habitual practices and implicit social structures; and political economists hone in on the political and economic realms and the circuits of structural and institutional power that pervade the system. In this way, it is apparent that the four main theoretical perspectives we have laid out in this chapter operate at different levels, and present broadly distinct ways of approaching the question of behaviour change: how to understand it, scale it, and make it more sustainable. Though they each assume **different theories of change** and potential points of intervention, we have tried to suggest, nevertheless, that there are areas of **complementarity** and overlap that are useful - indeed necessary - for understanding and engaging with the complex mosaic of societal behaviour change. In the end, academic theories on the subject of behaviour change, and how and when it might be possible to scale it, need to be closely integrated with observations and reflections based on lived experiences to fully appreciate the way that things happen in the real world. In the following sections, we unpack what this means for achieving behaviour change in practice.

4

Leverage and tipping points

Photo credit: Wikimedia Commons.

The question of scaling, suggests the need not just to work across all sites of behaviour change and all approaches to engaging types of behaviour change from individual to systemic, but also to consider tipping points and leverage points in these ecosystems of change, where change can be deepened and accelerated to the greatest extent.

Firstly, tipping points. This is the idea of there being **tipping points** in systems which originally came from the natural sciences (Lenton & Williams, 2013), but has been adopted by social scientists to understand social tipping points (Centola et al., 2018; Otto et al., 2020, 2020a; Smith et al., 2020) including in relation to decarbonisation (Smith et al., 2020). **Social tipping points** (STPs) have been defined within an SES (socio-ecological system) as the point "at which a small quantitative change inevitably triggers a non-linear change in the social component of the SES, driven by self-reinforcing positive-feedback mechanisms, that inevitably and often irreversibly lead to a qualitatively different state of the social system" (Otto et al., 2020:3).

There is also interest in the "butterfly effect", an analogy that comes from chaos theory: how a small act can trigger huge effects. A good example might be the protest of climate activist Greta Thunberg alone outside the Swedish parliament triggering a global Youth Strike 4 Climate movement that within just half a year had grown to 1.5 million students in 125 countries (Otto et al., 2020), or how the death of George Floyd lit the fuse of the Black Lives Matter movement; or how Extinction Rebellion protests triggered many governments and cities to declare climate emergencies. The point in these cases, however, is that these moments embolden others to act on deep-seated concerns and grievances around which there are long histories of mobilisation to draw on and re-activate.

Applied to behaviour change, the idea of 'tipping points' alludes to the way in which behaviours become socially unacceptable or new behaviours become widespread and diffuse. Moments of crisis are thought to create opportunities to accelerate these shifts. It is no coincidence that many of the most popular and frequently referenced examples of mass behaviour change come from the Second World War, around rationing, local food production and efforts to eliminate food waste for example, where there is clear evidence of radical reductions in consumption (Simms, 2013). A challenge in terms of drawing too many parallels from the experience of rationing, is that while publics may have been willing to make temporary sacrifices for a war effort, societies may be less willing to do so as part of a new norm of reduced consumption as would be required to tackle climate change (Newell & Simms, 2020). Rationing only lasted during the war, then consumption rapidly increased

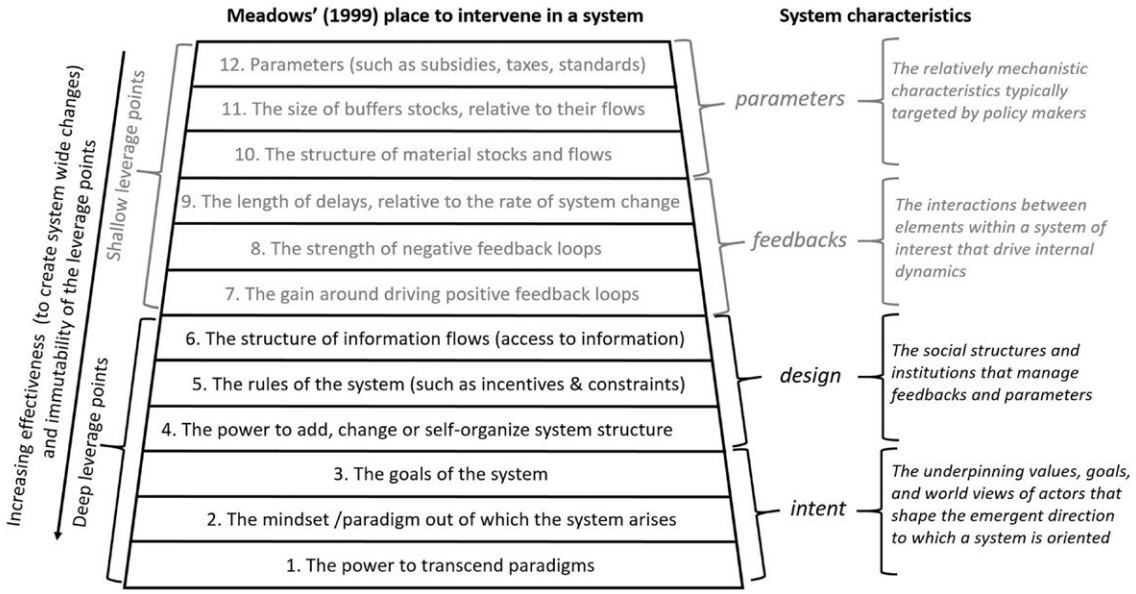
afterwards. That said, during the 2007-2008 financial crisis people looked at radical measures to reduce public spending. This involved working less with the benefit of reducing stress. Utah in the US introduced a four-day week for public sector workers and studied what happened. There was a 14% drop in CO_2 by closing public buildings for the extra day, wellbeing rose and absenteeism dropped as workers were happier (Simms, 2013:393). Although they changed the time period for accessing public services, a third of the public thought services had improved. Currently, the speculation is about whether the Covid-19 pandemic can perform such a catalytic role, as we explore below.

Otto et al. analyse the potential of social tipping interventions to "activate contagious processes of rapidly spreading technologies, behaviours, social norms, and structural reorganization within their functional domains that we refer to as social tipping elements (STEs)" (2020:2354). STEs then are "subdomains of the planetary socio-economic system where the required disruptive change may take place and lead to a sufficiently fast reduction in anthropogenic greenhouse gas emissions" (Otto et al., 2020:2354). Interestingly - and significantly for this work - very few of the STEs identified directly relate to behaviour change. Only the call to strengthen climate education and engagement comes closest to behaviour change, and even there the assumed causality is very indirect, even though 'lifestyles' are listed as a social tipping point element and embrace of fossil-free consumption and vegetarian diets are mentioned as examples.

The STEs they focus on include things such as removing fossil-fuel subsidies, constructing carbon-neutral cities, divestment from fossil fuels and disclosure of GHG emissions.

A second concept, popular among systems analysts, is the idea of "**leverage points**" (Meadows, 1999). These are places within a system where a small shift in one part of the system can generate changes across the system as a whole. With regard to leverage points, existing literature points to the need for more transformational approaches, but questions remain about how these will be achieved in practice (Smith et al., 2020). Echoing earlier reflections about the mismatch between carbon intensive behaviour 'hotspots' and where most policy interventions aimed at scaling behaviour change have been directed to date, Abson et al. (2016:30) suggest "many sustainability interventions target highly tangible, but essentially weak, leverage points (i.e. using interventions that are easy, but have limited potential for transformational change). Thus, there is an urgent need to focus on less obvious but potentially far more powerful areas of intervention". This approach to identifying 'deep leverage points' is inspired by the work of Donella Meadows (1999) on the hierarchy of intervention points for achieving change (see Figure 3 below). This suggests the need to go beyond incremental change aimed at adjusting policy parameters and towards rules, structures, values and paradigms implying a role for strategies informed by the types of psychological, sociological and political economy thinking reviewed above.

Figure 3: Intervention points in a system



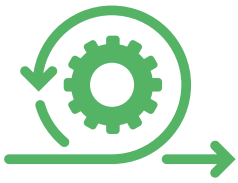
Source: Meadows (1999)

Many Commissioners expressed sympathy with the idea that many existing approaches to activate these leverage points or to generate positive social tipping points and avoid negative ecological tipping points (or feedback effects) are limited by their failure to address broader systems. As Ruth Potts put it, "the juggernaut is moving in the wrong direction". Energy use and growth are almost exactly correlated, with a recent academic synthesis showing that large and absolute reductions of resource use and GHG emissions cannot be achieved through observed decoupling rates, meaning that decoupling needs to be complemented by sufficiency-oriented strategies and strict enforcement of absolute reduction targets (Haberl et al., 2020). Efficiency gains are outweighed by production increases (see Box 4 on rebound effects).

From this point of view, absent a shift in the basic direction and orientation of the economy, behaviour change fades into insignificance. Others raise a more profound barrier still, questioning how much human nature itself can change. Commissioner Bill Rees (2020) suggests that humans have a built-in bias against climate action due to the fact that we socially, temporally and spatially discount it, leaving us with the challenge of how to break out of the "safe cognitive cocoons" in which many of us exist.

Isolating the effect of specific intervention points is also very difficult, especially as in many studies the point of reference is the impact of a 'bundle' of interventions. For example, Dietz et al. (2009) show that interventions that *combine* mass-media messages, household - and behaviour - specific information, and communication through individuals' social networks and communities could lead to reductions of 20% in household direct emissions. Moreover, they suggest this can be achieved in less than 10 years, with little or no reduction in household wellbeing. In terms of engagement or awareness raising (or what is sometimes called 'social marketing') rather than deeper behaviour change, the effect is sometimes easier to capture. For example, the 'Act on CO_2' campaign – the UK central government, then Department of Energy and Climate Change-funded Carbon Calculator – the first gov-backed carbon footprint calculator for the domestic sector, launched in the 1990s was very popular with the public with high levels of engagement and enthusiasm about the project. In the first six months, the site received nearly 2 million unique visitors, with the creation of around 650,000 footprint profiles, according to Commissioner Paula Owen and official statistics from the Department of Energy and Climate Change. Different potential actions were placed in three categories: home, appliance and travel and a number of personalised actions were available in each. This allowed householders to review them and choose the ones they thought they could adopt and once they had achieved them they were marked as completed and that was added to their individual profile. Others, however, have been critical of the incremental nature of some of the behaviour changes it proposed (Corner & Randall, 2011).

Between 17 and 20% market or population share can be enough to constitute a tipping point



A transition in systems provision can be said to have occurred when 50% market share is secured

A committed group of 25% can be sufficient to overturn social convention

Predicting when such tipping points might occur or isolating critical variables and precise causation when there are so many intervening variables at play is a fraught endeavour, however. Indeed, even in tipping points research, such moments are described qualitatively, not quantitatively: when a certain behaviour goes from being 'a minor tendency' to a 'major practice' (Otto et al., 2020), as perhaps with the rise of veganism in recent years in some parts of the world as part of a broader uptake of plant-based diets. Nevertheless, others do focus on key thresholds. Some suggest between 17 and 20% market or population share can be enough to constitute a tipping point and become the dominant pattern (Otto et al., 2020). Extinction Rebellion activists often point to the work of Chenoweth and Stephan (2011) on the percentage of the population that need to engage in civil

disobedience for it to have disruptive effects, while transition scholars suggest a transition in systems provision can be said to have occurred when 50% market share is secured (Fouquet, 2016). Centola et al. (2018), meanwhile, explore experimental evidence of how minority groups can reach a critical mass sufficient to induce social change. They suggest that a committed group of 25% can be sufficient to overturn social convention within the total population.

It clearly matters *where, when* and *who* leads such change. Some authors argue that it must be the "right" share of population, including well-connected influential people, trendsetters, and other types of social leaders with a high degree of agency (Otto et al., 2019:3). This speaks to our argument about intermediaries, brokers and leading by example, which is outlined further below. There are also implications for improving the efficacy of targeted strategies.

Commissioner Tim Kasser argues, ***"I believe we need to go for the changeable people... If you want policy changes, you need to get 30% of the middle 50%".***

In other words, those people that inhibit the space between the group resistant to any change and those who have already embraced behaviour change generally.

On timing, as Otto et al. (2020:7) acknowledge, "Since social-ecological dynamics are subject to complex processes that cannot be fully anticipated, it is not possible to predict when and where exactly tipping points will be crossed". The key issue is what Commission member Andrew Simms referred to as the 'prefigurative' politics: preparing the ground for when political opportunities arise to scale ambitions. As E.F. Schumacher put it (1973:31), "Perhaps we cannot raise the winds. But each of us can put up the sail, so that when the wind comes we can catch it." Some of the advocacy around anti-fossil fuel norms (Green, 2018) can be thought of in this way, eroding the social license to operate of the fossil fuel industry. At the same time, changes to goals and rules are proposed as deeper leverage points around demands for a multilateral framework on supply-side policies to leave large swathes of remaining fossil fuels in the ground (Newell & Simms, 2019).

Indeed, there are important temporal dimensions to the sequencing and timing of interventions:

Changes to reduce fossil fuel consumption at various social and temporal scales.

Social scales and roles	Temporal scales		
	Short-term (moments to days; for example changing usage of energy-consuming equipment)	**Intermediate (weeks to decades; for example adopting equipment with lower FFC)**	**Long-term (generational, societal transformation)**
Households as energy consumers.	Alter indoor temperature. Turn off lights and appliances not in use. Drive more smoothly. Share transportation. Shift to lower-FFC transport modes.	Replace appliances, HVAC (heating, ventilation and air conditioning) systems and motor vehicles with energy-efficient models. Insulate homes. Adopt photovoltaic systems. Choose small, efficient housing units, with proximity to public transit, shopping and work, when relocating.	Demographic transition to lower birth rates. Multi-generational households.
Household consumption affecting FFC in supply chains.	Purchase low-carbon-footprint foods and services.	Purchase low-carbon-footprint durable products.	Reverse preferences for large, suburban homes, large cars and distant holidays as expression of well-being.
Organizations as energy consumers.	Induce employees to reduce energy use (for instance, in offices, minimize use of task lights, computers, auxiliary heating/cooling devices). Reduce motorized business travel (for example by using video conferencing). Assign staff 'energy champion' responsibilities. Manage production systems in response to real-time price signals.	Make reducing FFC a strategic part of core business operations. Replace lighting and HVAC systems, equipment and motor vehicles with energy-efficient models. When relocating, rent or procure low FFC buildings. Adopt photovoltaic systems. Change work styles to accommodate a broader range of thermal conditions (for example, Japan's Super Cool Biz programme[91]).	Change core business offerings to align with climate challenges (for example BP's short-lived 'beyond petroleum' experiment[89], or Interface Carpet's goal of carbon neutrality[90]).
Organizations as providers of goods and services.	Find lower-footprint supply sources. Inform customers on how to use products and services offered in an energy-efficient way. Reduce FFC in the production chain.	Make reducing FFC a strategic part of core business offerings. Support and train staff in systems thinking and sustainability. Redesign products for lower energy requirements. Elect to manufacture, market and service low-FFC products.	Develop lower-carbon industry-wide standards (for instance, carbon labelling schemes for suppliers).
Large-scale social systems.	Improve crisis responses to power outages and fuel shortages.	Adopt policies to encourage and assist lower-FFC actions in households and organizations. Create institutions and norms for lower-FFC actions in groups of organizations.	Improve public transport system. Design communities to make non-motorized travel easier. Change norms for socially desirable housing, vehicle types, workstyles and work practices.

Actions located in different sections of the table are often affected by quite different factors. Here we emphasize actions by households and organizations at short and intermediate timescales.

Source: Stern et al. (2016)

When more rapid and disruptive change of a positive nature occurs, for it to become embedded, socialised and normalised, it needs to be institutionalised or supported by governance innovations that seek to ensure the durability and longevity of change. Even the prospect of regulation can be a key driver of change. Examples from history around efforts to legalise birth control show this to be the case (Westley et al., 2011). But besides rights-based struggles, campaigns to tackle air pollution, ozone depletion, biodiversity loss all demonstrate national and international legal protection often comes on the back of years or decades of advocacy. Commissioner Frances Westley also emphasised the importance of intention: that whilst regulation is important, its impact never lasts without intention. Aims must be socialised and become embedded in everyday conduct. Relevant examples for these particular phenomena might be around using seat belts and not smoking in public spaces, or respect for Covid-19 measures where the law enshrines the social expectation, but everyday enforcement relies on the uptake and respect for emergent social norms.

From transition studies we can see how niche behaviours get mainstreamed. The case of packaging free shopping and refilling containers was one example offered by a commissioner where in the Czech Republic, for example, the major drugstore Rossman is now rolling out refill stations of laundry detergent, while in Germany the supermarket franchise Edeka has refill stations for products like pasta and flour and Asda, in the UK, has introduced this in some of its stores. In other words, a behaviour that was socially and economically niche has become more mainstream *(scaling out)*.

Researchers have used a range of approaches to model, describe and narrate possible pathways to change from the use of more quantitative approaches such as Integrated Assessment Models (IAMs) (van den Berg et al., 2019) to the qualitative 'Pathways approach' adopted by the STEPS centre[32] (Leach et al, 2010). Behaviour change and lifestyles merely appear as one among many drivers of change and features of potential scenarios. Attempts to integrate IAM work with insights from socio-technical transitions hold out promise and represent potentially important avenues for future work (Sluisveld et al., 2020).

A large body of work on **socio-technical transitions** describes transitions in the provision of services such as mobility, heating and cooling. It describes how shifts occur whereby 'niches' disrupt dominant 'regimes', often enabled by changes in the broader 'landscape' that can accelerate these shifts (Geels, 2005) (see Figure 4). It combines analysis of social and technological elements so that things as diverse as practices, behaviours, governance institutions, innovation and finance and shifts in population can be included in the analysis. Examples include larger shifts from coal to oil, as well as shifts in cooking practices and transport behaviours. Different bodies of work place different emphasis on the key factors driving change, but there has been a move to include more analysis of governance and justice dimensions and to place questions of power and politics more centrally in explanations of the speed, direction and depth of transitions (Newell, 2020).

What is interesting, and useful from the point of view of our enquiry, is that questions of scale and pace are gaining more attention in transition studies (Sovacool, 2016; Newell & Simms, 2020). It might also be possible to understand key tipping points in behaviour in relation to the dynamic that exists between niches, dominant regimes and practices and the ways in which landscape pressures (around climate change) can disrupt regimes and move niche behaviours (around plant based diets or cycling) to become more mainstream (see Figure 4).

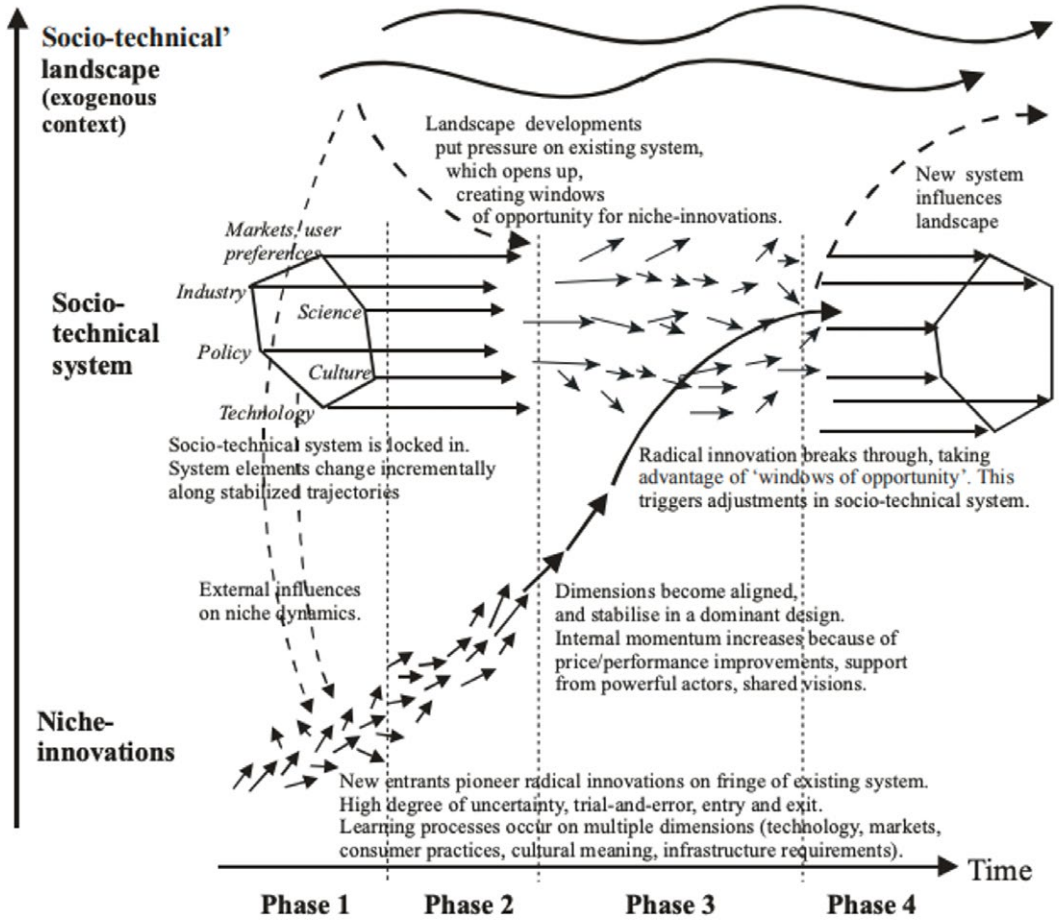
As well as forward projections, there are often also attempts to draw **lessons from history** about how behaviours have been changed rapidly, or proactive attempts to scale behaviour change and agree limits adopted. Rationing during World War II is often invoked in this regard, alongside examples of food and energy revolutions in Cuba in response to the loss of Soviet oil (Simms, 2013) and examples referred to from public health interventions around the use of seat belts, smoking, drink driving, or efforts to tackle HIV/AIDS (Simms, 2019).

Many Commissioners expressed scepticism, nevertheless, about the relevance and transferability of such lessons to the nature, scale and depth of change now required to tackle climate change which is more existential in nature and in most cases less about immediate physical impacts. In ways the search for relevant examples depends on the type of change we are interested in. Many of the examples mentioned here are of attempts by

32 https://steps-centre.org/

governments to persuade individuals to change behaviour. But if we think of collective action in pursuit of radical and disruptive political change, examples from the civil rights and womens' movements, movements to end apartheid or the fossil fuel divestment movement become more relevant. Resistance can involve disruptive behaviour change through consumer action such boycotts or the adoption of Khadi during the Quit India movement: a large-scale behavior change adopted across social classes, tied to an explicit political motivation (Koulagi, 2020).

Figure 4: The Multi-Level Perspective



Source: Reproduced from Geels et al. (2017a)

Below, we think about this in terms of an **ecosystem of change**, where the goal is to set up a series of mutually supportive dynamics across scales and spaces of governance so that wherever and whatever the initial point of intervention, effects can be magnified and scaled, spill-overs accelerated and momentum and contagion enhanced. Networks and intermediaries that move between these spaces using their power and influence to effect positive change have a particularly important role to play in scaling social innovations (Westley & Antadze, 2010). Or as Otto et al. (2020:8) put it, "The social tipping dynamics are likely to spread through adaptive networks of interactions rather than via straightforward cause–effect systems." This relates to our point above about 'mutual accountability' and 'reciprocity' and the ratcheting up of ambitions and commitment over time as states, communities, cities and businesses push one another to do more.

There are various points of intervention in the system of consumption (or what we refer to below as the '**chain of consumption**' (see Table 3) which, taken together, could help to bring about the scale of behaviour change prescribed. They are informed in different ways by the four approaches to behaviour change reviewed above. These run from the generation of demand, to shifts in corporate practice and government decision-making and citizen action with a view to setting in train virtuous circles where reduced and shifting patterns of demand within limits set by governments are met in innovative ways by business and civil society increasingly organised around goals of 'plentitude' and wellbeing rather than growth and increases in economic throughput per se. In different ways, and by different means, they address Meadow's (1999) leverage points (see Figure 3).

Table 3: The chain of consumption

Approach	Instrument	Example
Supply side policies	Bans, moratoria, phase outs of new production	Oil moratoria in Costa Rica, New Zealand, France, Belize Bans on fracking Phase outs of petrol and diesel cars Bans on ozone-depleting and climate warming chemicals (CFCs etc)
Budgets	Rationing Individual allowances & carbon budgets Tradable emissions quotas[33]	WWII examples of rationing Proposals for individual carbon budgets Globally- contraction and convergence and Greenhouse Development Rights framework
Working less/ consuming less	Reducing length of the working week Job sharing Paid care work	4 day working week[34] Universal Basic Income Utah state (USA) Germany's Kurzarbeit part-time working policy Grande-Synthe in France's guaranteed social minimum
Providing/ shaping alternatives	Planning Infrastructures Subsidies and support	Affordable public transport Bike lanes & schemes for employees / support for EV Grants for EV installation & home insulation
Advertising[35]	Restrictions on advertising in certain spaces (schools, hospitals) & at certain times Restrictions on targeting Restrictions on products Tax on advertising	Grenoble, Chennai, São Paulo Restrictions on TV adverts before certain times to protect children[36] Bans on tobacco advertising 'Badvertising' campaigns on fossil fuel products such as SUVs 1% tax on all advertising[37]
Regulation and choice editing	Energy efficiency standards Fuel efficiency standards for vehicles Rejecting carbon-intensive infrastructures	Energy labelling for products CAFE standards (USA) Restrictions on airport and road expansion, industrial farming

33 For more on David Fleming's proposal see https://www.flemingpolicycentre.org.uk/faqs/

34 https://www.4dayweek.co.uk/

35 By some estimates 2018 global advertising spend is expected to top $630bn https://www.statista.com/topics/3201/ad-blocking/

36 In Sweden, for example, TV advertising targeted at under-12s is banned on the grounds that children in that age range are unable to distinguish between programmes and advertising. See also Kasser and Linn (2016).

37 This has been proposed by the Rapid Transition Taskforce.

Approach	Instrument	Example
Self- regulation	Codes of conduct Supplier agreements Voluntary targets	Roundtables on responsible beef, soy, biofuels etc Targets by major retailers to decarbonise supply chains (Walmart, Tesco) Science-based targets[38]
Consumer information	Labelling Certification Carbon foot-printing apps	Soil association standards for organic food Marine and Forestry Stewardship Council BrewDog carbon footprint menu Carbon reduction apps like VYVE[39]
Education	School programmes City wide initiatives National programmes Experiential learning	School sustainability leaders Carbon Trust and Energy Savings Trust (Switch off campaigns) Forest schools
Voluntarism	Pledges Voluntary simplicity Community organising	Meat free Mondays Flight Free Year pledges Veganuary Ride share schemes Repair cafes
Social mobilisation	Campaigns aimed at specific products / companies Generic campaigns Campaigns for alternatives Campaign in cultural spheres to challenge the social license to operate	OilWatch Boycott Exxon Divestment movement Shareholder action Fridays for Future/ Youth Strike 4 Climate Fossil Fuel Non-Proliferation Treaty Support for wind energy (Possible) Art not Oil movement, Liberate Tate, Liberons le Louvre, Fossil Free Culture in the Netherlands
New goals/ metrics[40]	Going beyond conventional indicators of growth: Wellbeing / Prosperity / Plenitude as the goal	Happy planet index Gross National Happiness Wellbeing index Degrowth

38 https://sciencebasedtargets.org/

39 https://www.bp.com/en_gb/united-kingdom/home/news/press-releases/vyve-a-new-way-to-understand-track-and-reduce-carbon-from-your-phone.html

40 For critical analyses of wellbeing indicators see Fuchs et al. (2020), Jackson (2020), and Walker and Jackson (2019).

Covid-19 as a tipping point?

"Those who dismiss things as too small to have an impact on the world haven't heard of coronavirus" (Commissioner Paula Owen).

As the Commission started its work, the world was slowly waking to an unprecedented global threat: the Covid-19 pandemic. The suffering and misery that the virus has brought to many millions around the globe is unparalleled. Beyond the virus itself, which has killed over 1.5 million people worldwide to date, the containment measures implemented to halt its spread have unleashed a raft of social and economic issues that will be felt for a generation. As the World Health Organization (WHO) notes, lockdowns and coronavirus containment measures are having a "profound negative impact on individuals, communities and societies" (2020) with the poorest and most disadvantaged in society being the hardest hit. Around the world, we are seeing spikes in mental health problems (Moreno et al., 2020), disruptions to education and widening inequalities across employment and health, which are magnifying and reinforcing existing inequalities across lines of socio-economic status, education, age, gender, ethnicity and geography (Blundell et al., 2020). The overarching reality of Covid-19, however, is that it is not a random anomalie. The frequency of emerging infectious and zoonotic diseases will only increase in light of our warming climate and our continued infringement on the natural world (Schmeller et al., 2020).

In terms of behaviour change, the pandemic has given rise to a live experiment in efforts to shape behaviour on a mass scale, which potentially sheds light on our enquiry. This ongoing crisis also opens up new horizons of possibility for understanding social acceptance of different approaches to behaviour change, which might also apply to tackling sustainability challenges since it has brought changes to patterns of work, mobility, food and energy consumption. Perhaps above all, the central role of the state as provider of welfare and in ensuring the provision of goods and services to meet basic needs has come to the fore: repurposing industries, guaranteeing basic incomes, supporting more vulnerable social groups and reconfiguring systems of transport and food provision in light of the crisis. These are also roles the state will be expected to perform to address sustainability challenges and align collective behaviours with the severity of the climate crisis.

Views were divided among Commissioners about the likelihood that new patterns of behaviour observed in some parts of the world and among certain social groups around home working, the embrace of cycling, greater use of public parks (once immediate quarantine measures were lifted) and the development of networks of mutual aid would outlast the pandemic. It is notable that some employers have been open to the idea of more home-working, the popularity of virtual conferences has been tried and shown to be viable, and some governments have provided support to cycling and pedestrianisation, as well as using state funds to support vulnerable workers, heightening interest in universal basic income schemes.

Covid-19 has disrupted individuals' behaviours, having a marked effect on the way in which we all navigate our daily lives, what Leo Murray referred to as a "huge habit discontinuity event". In his words, "the more time that passes, the more our past lives will become a distant memory". In many ways, we have been granted a glimpse of how alternative economies can rapidly be brought into being and how ideas and policy proposals deemed outlandish before, become possible within a very short space of time. The same could be said for alternative ways of living. As Commission member Dario Kenner put it, notwithstanding the immense suffering that has accompanied it: "The pandemic has provided us a glimpse of a low-carbon, low-mobility 'good life'". The range of societal responses to Covid-19 offered, in Commission member Julia Leventon's words, "an opportunity to see what might be".

"The pandemic could be a catalyst for behaviour change on a new scale that we couldn't have imagined. How we draw attention to that needs to be done with thoughtfulness and handled with care and compassion."

(Commissioner Renée Lertzman)

The All-Party Parliamentary Group (APPG) RESET enquiry, led by UK politician Caroline Lucas, found evidence of a substantial desire for behaviour change amongst the British General Public:

66%

66% of UK adults want the government to prioritise health and wellbeing of citizens over GDP growth

63%

63% cent support a jobs guarantee

66%

66% of the public think the Government should intervene to make society fairer

57%

57% support some form of universal basic income

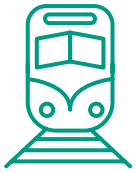
60%

60% support a shorter working week

65%

65% support rent caps

19% **only 19% think housing policy is working well**



30%

30% want to commute less

18%

18% think they will shop less in future

26%

26% think they will holiday more in the UK in future

13%

13% are growing more food themselves

(UK APPG RESET Enquiry findings, 2020)

Photo credit: Atom, Unsplashed, 2020.

Others were keen to emphasise, however, that the pandemic may only constitute a temporary rupture in society. Commission member Manisha Anantharaman labelled the 'Covid moment' as a "partial infrastructural breakdown" that emphasised our "mutual vulnerability". It was, as Commissioner Nafeez Ahmed noted, as if the "crisis is the pin that burst the bubble", exposing vulnerabilities in our food, transport and care systems. While the experience of lockdown was deeply subjective, infrastructural breakdown's structural impacts were visible in the uneven access to healthcare, mobility and green space.

Other members of the Commission urged caution, therefore, with regard to the transformative potential of the pandemic, reflecting that it could go either way. Commissioner Kate Burningham stressed that the vulnerabilities exposed by Covid were perhaps less mutual and more asymmetric in practice than had originally been conjectured - with affluent, home-workers finding themselves better insulated against Covid risks than those living in more public-facing, precarious and deprived situations, often with limited access to (green or even indoor) space or the financial and physical capacity to self-isolate. She emphasised that alongside the scale of deaths, long-term illness and immiseration, the impacts of existing inequalities in outcomes and broad impacts on wellbeing and mental health were just becoming apparent, and while environments may have improved in visible ways in some localities, the overall impact in terms of reducing emissions may, in the end, have a minimal impact on climate change. Indeed, Commissioner Wenling Liu pointed to the surge in car ownership in China as the use of public transport was now seen as a public health risk, with obvious implications for both near- and long-term emissions lock-in, as well as dampening the momentum building around air pollution and pedestrianisation policy. Dr. Liu also cited the fact that lockdown measures have awoken consumers to the convenience of e-commerce, which is a trend that could continue long into the economic recovery. While only one part of a broader economic trend, this observation echoes the sentiment of Commissioner Lewis Akenji that "Covid-19 has shown that our systems of provisions are not designed for sustainability – they are based on demands for convenience".

The disagreement within the Commission as to whether Covid-19 could be a springboard or tipping point for scaling sustainable behaviour change, is testimony to the messy, unpredictable and non-linear nature of behaviour change, a fact which presents challenges for attempts to shape and understand it. All moments of crisis present opportunities for political forces to exploit the ensuing disorientation and advance their preferred political project. As Milton Friedman, an architect of neoliberal thought, once argued:

> **Only a crisis – actual or perceived – produces real change. When that crisis occurs, the actions that are taken depend on the ideas that are lying round. That, I believe, is our basic function: to develop alternatives to existing policies, to keep them alive and available until the politically impossible becomes the politically inevitable. (2009:14)**

Moreover, evidence of the rush to get back to an abnormal 'normal' is there for all to see. From bailouts for oil companies and airlines to the fast-tracking of controversial infrastructural decisions and the increased clearing of rainforests in Brazil, many governments have made the most of reduced public scrutiny and scope for social mobilisation to consolidate and advance climate destructive projects. As the recently published *Production Gap Report* demonstrates, "G20 governments have directed more COVID-19 recovery support to fossil fuel production and consumption than to renewable energy, energy efficiency, and other low-carbon alternatives (USD 233 billion vs. USD 146 billion, as of November 2020)" (SEI et al., 2020: 20).[41]

USD 233 billion

USD 146 billion,

G20 governments have directed more COVID-19 recovery support to fossil fuel production and consumption than to renewable energy, energy efficiency, and other low-carbon alternatives.

Gains in reduced traffic and air travel have been quickly undone. In the case of the UK, in the first four weeks of the lockdown carbon emissions fell by 36%. Nevertheless, by June, Britain's total emissions savings had been reduced to a 16% drop, as more cars returned to its roads and demand for energy started to rise.[42] Air pollution in China is already back to pre-Covid levels, with Europe's cities not far behind (CREA, 2020). Commission member Paula Owen recounted the rise in single use plastics and a general "throwaway culture of Covid-19" which, while sanctioned on the grounds of public health, has undone years of sustainable behaviour change and has the potential to spill-over into other sectors of society. It is also worth recalling that even the reductions in emissions associated with reduced travel and the like during the pandemic (in the range of 10-30%) still fall far short of the levels of reductions required for 1.5 degree compatible lifestyles (Akenji et al., 2019).

Clearly, both those advocating systemic change and behaviour change for sustainability, as well as those keen to bolster their support for incumbents, are seeking to capitalise on the crisis for different ends. Added to this is the fact that responses to the Covid-19 crisis were underpinned by forced behaviour change, accompanied (in theory at least) by enforceable sanctions and an agreed and imminent threat, a scenario unlikely to be mirrored in responses to climate change.

Yet, there are lessons from policy communication and framing which could have implications for scaling sustainable behaviour change (Ockwell et al., 2009; Whitmarsh et al., 2011). Commissioner Ruth Potts noted "that if a proposal is clear, well communicated and has a clear objective, people will comply, and even go way beyond that" in reference to social distancing and other behavioural shifts. In fact, strict compliance to social distancing, self-isolation and mask wearing suggests that notions of civic duty and collective responsibility can still be leveraged throughout society and could be instrumental in scaling sustainable behaviour change. According to the *Rapid Transition Alliance*, several lessons stand out from global pandemic responses with regard to behaviour change:[43] the importance of clearly communicating risk; the speed with which daily habits can change and adapt to shifting social norms; how opposition to change can rapidly dissipate once changes have been introduced; and

41 Also see: Energy Policy Tracker: https://www.energypolicytracker.org/

42 https://www.theguardian.com/environment/2020/jul/19/carbon-savings-from-covid-19-lockdown-halve-within-weeks

43 https://www.rapidtransition.org/stories/pandemic-lessons-for-the-climate-emergency/

how restrictions on normal consumer activity can create space for innovative, creative action and new ways of meeting needs.

However, despite the initial compliance of mask-wearing and social distancing, new virus containment measures implemented in response to a second wave have been greeted with pushback, most notably in the UK and the USA. While this public backlash has been attributed to the phenomenon of behavioural fatigue, the evidence base is weak (Mahase, 2020; Harvey, 2020). It does, however, emphasise the inevitable risk that top-down, forced behaviour change (accompanied by enforceable sanctions) will be politicised and may buttress ongoing 'culture wars' within the political discourse, where a distrust of expertise, the media and the support of divisive political figures may prolong the pandemic and subsequent containment measures, including the rollout of vaccines. For stakeholders active in the sustainable behaviour change space, this is a concerning trend that must be monitored closely and all initiatives and strategies must be conscious of it. It also demonstrates the critical need for culturally-sensitive communication, as well as a conciliatory leadership style that can speak effectively to diverse audiences, interpreting new rules through their own social, cultural and ideological lenses.

Photo credit: Ehimetalor Akhere Unuabona, London, UK, 2020.

5

Future intervention points

As things stand under a business-as-usual scenario, we are headed towards 3-4 °C of warming by the end of the century, with catastrophic consequences for humanity and the ecosystems upon which we depend (O'Neill et al., 2016; Sherwood et al., 2020). What has led to this scenario, and sustains it today, is unsustainable behaviours by governments, businesses, cities and citizens. We clearly need dramatic and far-reaching change by *all* of these actors, though responsibility is - in the words of the UNFCCC - 'common but differentiated'.

Consistent with the idea of **ecosystems of transformation,** change in one area can enable and facilitate change in others. The key is to support an upward trajectory of ambition as cycles of reciprocal action by diverse actors drive deeper change. Ambitious government targets that incentivise the private sector to bring different technologies to market, which embolden city planners to design zero carbon cities and to build alternative infrastructures that make it easier for individuals to lead meaningful, sustainable lives, could be transformative. Likewise, mobilisations and demands from below by communities, youth movements, NGOs and citizens participating in democratic spaces can push cities, businesses and governments towards more ambitious climate action, as the multiple declarations of climate emergencies testify. As we have seen, individual, household, voluntary and community action all make a difference in their own right, as well as creating space for bolder government action and new innovations from public and private actors by preparing the ground for more ambitious interventions. This is what we refer to as the virtuous **cycles of reciprocity**, where action by one set of actors enables action by another, ratcheting up ambition in a positive upward spiral.

If it is often claimed that larger transitions will not be possible until citizens have demonstrated 'demand' for it, as politicians fear adopting unpopular measures and not bringing voters with them (Willis, 2018). Though frequently invoked to justify inaction, such claims need to be treated with extreme caution since most people are not asked about the level and pace of change they would like to see, or which of the costs associated with doing nothing they would be willing to bear. Indeed, as Moberg et al. (2019: 508) argue: "the door for stronger government intervention is already 'half-open'. Governments already intervene with command-and-control measures in several high mitigation potential areas, so one may assume that this means there is already public acceptance for such intervention; an assumption corroborated by our study. Respondents specifically call for

stronger government intervention in the high mitigation potential areas as of yet receiving minor policy focus." Yet government action needs to be complimented with behavioural change by individuals and communities if dangerous climate change is to be avoided. This has to be the basis of the **social contract** for addressing the climate emergency: each of us doing what we can, with the resources and means available to us, in the time we have available and in the places we are, supported, enabled and enhanced by government action.

Given the gravity of the situation we face, and the diminishing window of opportunity within which to scale-up action, all options and strategies for change need to be aggressively pursued *simultaneously*, tailored to the contexts in which they will be enacted and change sought. With this in mind, we have sought to emphasise the interdependence and mutually reinforcing nature of strategies directed towards future intervention points, as they can bolster and sustain one another as part of an ecosystem of transformation. We clearly need both individual *and* systemic change. The time for arguing over which comes first has passed. But choices about which combinations of strategies to pursue must be tailored and targeted to the scale and nature of change sought, as well as the context in which they will be pursued. It is clearly also a time for bold experimentation given the scale and severity of the challenge and the potential for positive unforeseen effects as ideas are shared, demands gain traction and unexpected political realignments take place.

The challenge is to identify and activate the virtuous cycles along the spectrum of intervention points, using all levers within the ecosystem of transformation.

Insisting on system change as a prerequisite to other types of change discourages change from below at the very moment we need it most, reifying outdated models of top-down social change that remain popular among some on the Left (encapsulated in the slogan 'one solution, revolution!'). It can also justify inaction and negate the impacts (positive and negative) we can all have in the multiple roles we fill - in the workplace, at home and as part of communities. Fossil fuel companies and multinationals around the world would be delighted at the prospect that active citizens are discouraged from taking personal responsibility or mobilising in the everyday, in preference for awaiting the end of capitalism and mass consumerism. At the same time, as noted above, reducing the challenge to the individualisation of responsibility plays well to those seeking to avoid structural change to an economy in which they are heavily invested and from which they greatly benefit.

We have sought to emphasise below the diversity of intervention points to initiate these transformational shifts. There is clearly significant variance in state capacity, around planning, taxation, enforcement and the like, as well as different forms of capitalism and state-market relations, which will undoubtedly shape the nature of leverage points and the scope and likely effectiveness of interventions. For instance, what is possible in China might not work in Denmark and vice versa. The degree of engagement from civil society and business is also highly uneven across different political and cultural contexts.

Given the different levels of historical responsibility and global interdependence, sectors and regions also have different starting points and baselines from which to shift behaviours. Promoting cycling in the Netherlands has a head start, but it will be harder in the USA because of the size of the country, the organisation of infrastructure and dominant cultures. Likewise, the baseline for supporting plant-based diets in India, as opposed to in a meat-heavy culture like Argentina is very different. In many poorer societies, there are significant opportunities to avoid lock-in to unsustainable practices and pursue '**lifestyle leapfrogging**', supporting these shifts through aid and climate finance. In all societies, however, the most resistance might come from the fact that

the most prolific consumers and movers are also often the most powerful political actors, using their influence to quash initiatives that constrain their behaviours.

We have witnessed decades of actions, strategies and interventions aimed at bringing citizens on board with climate action. Some have achieved limited success. None, however, has been able to achieve the degree and scale of change now required. We are, therefore, in unchartered territory. New approaches are needed to get to the roots of unsustainable consumption and production in the current economy.

Members of the Commission proposed criteria that should guide future interventions. Future interventions should:

1. **Improve wellbeing**
2. **Reduce environmental footprints**[44]
3. **Distribute economic resources and benefits fairly**

The Commission identified a number of 'Future Intervention Points' for scaling sustainable behaviour change where strategies can be directed to apply pressure and disrupt incumbent, institutionalised and established behaviours, values, systems of provisions and structures of power. Due to the expansiveness of behaviour change, and the urgency of transformation required, the Commission noted the importance of going beyond the intervention points of production and consumption to explore deeper, more profound shifts in behaviours and values in order to achieve scalability.

Below we propose six overarching areas for action, incorporating 16 key future intervention points. For clarity and accessibility, each individual intervention is split into two: the '**what**' and the '**how**'. The 'what' section outlines the potential that the intervention point has, both in terms of their scalability and their transformative effect. The 'how' section outlines strategies, initiatives and shifts in approach that stakeholders and practitioners can pursue in order to catalyse change and create momentum for sustainable behaviour change, which can spillover into different areas of society.

i. One planet living: 'Strong' global sustainability

Strong sustainable consumption (SSC): Focusing on input and throughput

The Rapid Transition Taskforce report (2019) seeks to identify interventions that enable "a radical shift in the **Overton window** for policies relating to sustainable consumption, behaviour change, and regenerative ways of living, internationally and particularly in high-impact countries." The Overton window refers to the six stages that ideas pass through on the path from being politically marginal to becoming actual policy, implemented in the real world: 1. Unthinkable 2. Radical 3. Acceptable 4. Sensible 5. Popular 6. Policy.

A key question then is what this would look like for a **strong sustainable consumption** agenda: for proposals currently deemed radical and unthinkable to become accepted policies enjoying popular support. This approach emphasises the need for a reduction in overall resource consumption, instead of looking at relative reductions in individual consumption (Fuchs & Lorek, 2005; Lorek & Fuchs, 2013; Arantharaman, 2018). This is contrasted with **weak sustainable consumption** (WSC) as an approach which focuses on efficiency gains in existing patterns of consumption through technological innovations and small-scale behaviour change. In terms of achieving this it is suggested, "NGO campaigning for sustainable consumption has to overcome the habit of promoting sustainable (in fact merely green) consumption based on traditional marketing strategies. NGOs need to distance themselves from WSC as well as from addressing consumers merely as consumers, rather than as citizens" (Lorek & Fuchs, 2013:41).

In this regard, appeals to intrinsic values, grounded in a 'new materialism' (Simms & Potts, 2012; Schlosberg & Craven, 2019), are more likely to lead to a spill-over into other patterns of behaviour, rather than appeals to financial self-interest or social status (Kasser, 2011; Van der Linden, 2015). What's more, a shift towards SSC will also tackle issues such as the dominant culture of consumerism and materialism (Mont, 2019) by putting both upper and lower limits on consumption and production. Combining both upper and lower limits will also prioritise fairness and equity within behaviour change, helping to reign in the polluter elite while lifting up the poorest and most marginalised in society.

44 We use the term "environmental footprints" as opposed to ecological footprints because the latter do not account for greenhouse gases other than CO_2, for example. Environmental footprints incorporate GHG footprints, ecological footprints, and other impacts.

ii. Just transitions: Economic and social (climate) justice

From efficiency to sufficiency: Shifting the debate on limits and prosperity

The 'What'

To achieve the goals of the Paris Agreement, countries need to look beyond efficiency improvements towards absolute energy consumption, as well as understanding the drivers of consumption more broadly. Discussing innovations in residential energy use, Lorek and Spangenburg (2019:287) suggest that "to be effective, efficiency measures have to be embedded in a concept of sufficiency which strives for limits and absolute reduction of energy consumption". This reflects the fact that while energy efficiency increased significantly across OECD countries, total energy consumption only decreased marginally because of the existence of rebound effects and spill-over effects (see Box 4).

The 'How'

A move towards sufficiency would capture the emerging recognition that we need to set upper limits on consumption either through personal carbon budgets, rationing measures or sustainable consumption corridors. Such a shift would fundamentally question cultural and social values around what it is to live a 'good life' and what is required to do so. In other words, what provision of services and level of consumption is *sufficient* for a good life (Princen, 2005)? There is growing interest in wellbeing,[45] sustainable prosperity (Jackson et al., 2016) or prosperity without growth (Jackson, 2011), de-growth (Kallis, 2018; Hickel, 2020), and the idea of 'plentitude' (see Box 5 below). Setting these upper limits would need to be democratically determined, in order to ensure public buy-in and longevity, and then monitored and enforced accordingly. The difficulty of doing this cannot be underestimated, but through the application of principles of fairness and the renewal of democratic institutions it could be feasible.

Others have described their vision of a sustainable economy as a 'conserver economy' where wellbeing would be measured not merely in terms of the amount people spend, but rather in the availability of clean air and water, nutritious food and safe

Box 4: Rebounds and spill-overs

'Energy sufficiency' involves reducing consumption of energy services in order to minimise the associated environmental impacts. This may either be through individual actions, such as reducing car travel, or through reducing working time, income and aggregate consumption ('downshifting'). However, the environmental benefits of both strategies may be less than anticipated. This is because:

- People may save money that they can spend on other goods and services that require energy to provide (**rebounds**).
- People may feel they have 'done their bit' for the environment and can spend time and money on more energy-intensive goods and activities (**spillovers & moral licensing**).
- People may save time that they can spend on other activities that require energy to participate in (**time-use rebounds**).

Source: Sorrell et al. (2020)

Box 5: Principles of Plentitude

1. **A new allocation of time**. Reversing the decade-long move toward longer hours of work – a "work-and-spend" cycle which has yielded exhausted, indebted households and more unemployment, as hours are concentrated in fewer and fewer people and higher carbon emissions.

2. **"Do-It-Yourself" or self-provisioning**. People can use the newfound free time that they get from following Step 1 to reduce what they have to buy on the market and provide for themselves in low-impact ways.

3. **An environmentally aware approach to consumption**. One which emphasises the recirculation and reuse of goods, sharing, and the creation of a new consumer culture.

4. **New investments that are held widely and publicly**. By recovering hours, individuals are free to fortify social networks and build common property.

Source: Schor *'True Wealth'* (2011: 4)

45 https://wellbeingeconomy.org/

and vibrant neighbourhoods. What is taken from the earth towards these ends is determined only by what is needed to meet these essential needs (Trainer, 1995; Newell, 2019).

De-growth meanwhile also signifies 'a desired direction, one in which societies will use fewer natural resources and will organize and live differently than today. Sharing, simplicity, conviviality, care and the commons are primary significations of what this society might look like' (D'Alisa et al., 2015:3). Such a shift also implies new indicators of progress. Happiness indicators such as Gross National Happiness as adopted by Bhutan or the Happy Planet Index developed by the New Economics Foundation to "measure what matters: sustainable wellbeing for all", which assesses nations according to their ability to support "long, happy, sustainable lives" (NEF, 2016). What follows is social innovation to drive shifts in business practice, technology development and innovation to support sustainable lifestyles (Westley et al., 2011; Hiteva & Sovacool, 2017), such as local food networks which enable and reinforce ecological citizenship (Seyfang, 2006).

Cultures of consumption (Dauvergne, 2008) are critical here alongside the dominant focus on productionist drivers of technology, innovation and finance and their role in meeting rising demand. Managing demand and addressing consumption, rather than just varying supply, is key. For example, how far should we invest in new supply as opposed to reducing demand? Retrofitting existing buildings is essential as 90% of buildings today will still be operational in 2050. Retrofitting and demand reduction is much more cost effective, but the debate is all about expanding supply (Boardman, 2010). Discussions around food and energy futures tend to forecast and then presume ever increasing demand and consumption. As such, the only remaining choices are which technologies and policies meet that growth, regardless of whether that growth is sustainable, whether demand can be reduced or whether efficiency and conservation measures can reduce waste.

One approach to understanding this is the "avoid-shift-improve" framework (Creutzig et al., 2018) with its hierarchy of avoiding unnecessary resource use in the first instance as the priority (see below).

Addressing social and economic (climate) injustice

The 'What'

At the time of the Commission's work, the world was experiencing a series of exogenous shocks which shed light on entrenched economic injustices. As noted above, Covid-19 accentuated disparities within the world of work, accessibility to healthcare, housing and mobility, as well as the role of the state and its ability to intervene. As Commissioner Manisha Anantharaman remarked, Covid-19 has "interrupted the spatial-temporal rhythms of everyday life" to unveil our "mutual vulnerability". This shared vulnerability has focussed attention on the necessities of life and shown that there are alternative ways of working, moving and living, as well as galvanising the appetite for change (RESET, 2020).

The spread of the Black Lives Matter movement also signifies a rupture, where the legacies of social, racial and economic injustices have been brought to the fore and concrete demands have been made in order to overcome the legitimacy crisis of the current social contract. The value-shifts, legislation and new social contract that emerges from these events could have a significant impact on systems of provision, consumption and individual behaviour change, making it an important

Illustrative 'avoid-shift-improve' options in different sectors and services

	Service	Avoid	Shift	Improve
Transport	AccessibilityMobility	Integrate transport and land-use planningSmart logisticsTeleworkingCompact cities	Mode shift from car to cycling, walking, or public transit	Electric two-, three- and four-wheelersEco-drivingElectric vehiclesSmaller, light weight vehicles
Buildings	Shelter	Passive house or retrofit (avoiding demand for heating/cooling)Change temperature set-points	Heat pumps, district heating and coolingCombined heat and powerInvertor air conditioning	Condensing boilersIncremental insulation optionsEnergy-efficient appliances
Manufactured products and services	ClothingAppliances	Long-lasting fabric, appliances, sharing economyEco-industrial parks, circular economy	Shift to recycled materials, low-carbon materials for buildings and infrastructure	Use of low-carbon fabricsNew manufacturing processes and equipment use
Food	Nutrition	Calories in line with daily needsFood waste reduction	Shift from ruminant meat to other protein sources where appropriate	Reuse food wasteSmaller, efficient fridgesHealthy fresh food to replace processed food

Many options, such as urban form and infrastructures, are systemic and influence several sectors simultaneously.

Source: Creutzig et al., 2018. Reproduced with permission.

area of focus for future interventions. As such, strategies that attempt to address and ameliorate 'mutual vulnerability' can have significant impacts for sustainable behaviour change, such as reducing the inequality between the polluter elite and poorest and most marginalised groups in society (Chancel & Piketty, 2015).

Addressing these injustices also speaks to the need to *decolonise the sustainable living debate*. As research on ecologically uneven exchange and global environmental justice (Roberts & Parks, 2008; Sikor & Newell, 2014) clearly shows, unsustainable consumption by elites the world over is only possible because of racialised, gendered and class based modes of extraction and appropriation organised around 'cheapness' (Patel & Moore, 2018), constituted historically, but ever present today in the way the social and environmental costs and benefits of consumption and production are unevenly distributed within and between societies (Newell, 2020a). The need to address these issues is underscored by the analysis above of historical inequities, carbon debts and the over-use of the commons by polluter elites which must inform discussions around fair shares, carbon budgets or rationing proposals.

The 'How'

By being conscious of economic injustices, strategies can be effective at empowering citizens, enacting a variety of co-benefits and mainstreaming behaviours - all of which having obvious implications for scalability. Perkins (2019) suggests that addressing economic injustices is a *precondition* for participatory governance and equitable solutions, as the ubiquity of economic injustices actively reduces the *political space* for climate action. Directly addressing economic injustices could therefore create the (pre)conditions and space for scaling sustainable behaviour change. There are also vital racial, class and gender dimensions to access and responsibility that all interventions and strategies must be conscious of and explicitly address (Newell, 2005). For example, patterns of energy access, access to low carbon technologies and vulnerability to price rises during transitions are all heavily racialised (Newell, 2020a).

There has been renewed interest in a Universal Basic Income (UBI) and some experimentation with this in parts of Europe, as one way to tackle some of these inequalities. For example, in Grande-Synthe, on the outskirts of Dunkirk in France, a guaranteed social minimum (MSG) has been tested since April 2019. The goal is to provide each month to the most precarious households in Grand-Synthois with an income corresponding to a poverty line of €1,855 for a single person, for a period of one to six months. 40% of the 1.2 million Euros budgeted to fund the scheme (for one year of application) comes from the savings made by replacing bulbs in public lighting with LEDs. This is in addition to and builds on long-standing calls from feminists for paid care work or 'care work as commons'.[46] However, there are emerging concerns that a UBI may not enable the reductions in consumption-related emissions needed to align with a 1.5 degree celsius target (Kalaniemi et al., 2020; Lawhon & McCreary, 2020). One study in Finland found that the average annual carbon footprint at the UBI level - the lowest income decile - was around 4.8 tCO_2 equivalent (Kalaniemi et al., 2020). This is substantially lower than the average carbon footprint in Finland, which is 9.4 tCO_2 equivalent, but is still far from compatible with a 1.5 degree celsius lifestyle (IGES, 2019; Kalaniemi et al., 2020). While more research is required in this area, initial findings suggest that to be an effective mitigation tool, a UBI that seeks to address economic injustices must be combined with broader shifts in values, behaviours and the provision of services and infrastructures.

Re-thinking work

The 'What'

Changes to modes of working offer a powerful way of reducing pressure and stress in peoples' lives, as well as shifting patterns of consumption. As Simms argues (2010), "moving towards a much shorter working week would help break the habit of living to work, working to earn, and earning to consume". The productivity gains derived from work can either be used to enhance the volumes of consumption or to decrease the time we all spend working (Cohen, 2019). Due to the need to radically curtail consumption in industrialised nations in particular, worktime reduction has the potential for scaling sustainable behaviour change across regions and sectors. Research suggests that work time reduction could shift behaviours in more sustainable directions by decreasing the scale of economic output and the environmental intensity of consumption patterns (Knight et al., 2013; Rosnick & Weisbrot, 2007) including CO_2 emissions

46 https://www.degrowth.info/en/2017/02/carework-as-commons-towards-a-feminist-degrowth-agenda/ and https://undisciplinedenvironments.org/2020/04/07/within-and-beyond-the-pandemic-demanding-a-care-income-and-a-feminist-green-new-deal-for-europe/

(Fitzgerald et al., 2018), as well as improving life satisfaction and societal wellbeing (Borowy & Aillon, 2017) and nurturing more intrinsic values (Kasser, 2002)). Despite the myriad of benefits, worktime reduction has stalled in countries over recent decades and has begun to reverse, with only some exceptions (Schor, 2011; Burger, 2015).

There are many factors that can explain the resistance to work time reduction but, in regard to scaling sustainable behaviour change, the major drivers are that consumption patterns get locked in (Cohen, 2019; Schor, 2011) and that work and careers are the primary conduits for the expression of worth and social identity. What's more, consumer culture has left us woefully unprepared to know how to fill the additional leisure time that would be created through work time reduction that is not tied to further consumption or unsustainable behaviours.[47]

The 'How'

Interventions aimed at reducing the working week and provoking us to re-think the world of work more generally must be accompanied by efforts to live contently with more unstructured leisure time and cultivate interests consistent with both planetary boundaries and personal ambitions. The economic fallout and subsequent recovery from Covid-19 could present an opportunity to challenge traditional notions of work and introduce work time reduction measures, temporarily at first, but with a view of creating a permanent programme – especially in light of looming automation in multiple sectors. Take Germany's Kurzarbeit part-time working policy as an example, set to run through 2021, which allows business to pursue work time reduction during a time of structurally low aggregate demand (Contessi & Li, 2013), or the USA state of Utah's experiment with a shorter working week, initially proposed for reasons of austerity, but then kept in place by popular demand on the part of state employees.[48]

A recent study of 50,000 British businesses by think tank Autonomy concluded that a carefully designed four-day week could be introduced immediately and be financially viable for most firms with more than 50 workers (Elliott, 2020). Most recently, the Spanish government has announced plans to pilot a four-day working week as a direct response to the economic challenges wrought by Covid-19 (Stone, 2021). Not only is there scope here for funders and organisations to 'walk the talk' by introducing a four-day week internally, but there is also the opportunity to support wider campaigns for national legislation that protects the rights of workers to request a four-day week (Rapid Transition Task Force, 2019).

Enjoying a liveable income is also an important condition for creating a conducive backdrop to sustainable living. In recent years, workers across many sectors have seen structural changes that have led to the rise in the so-called gig-economy (e.g. zero-hour contracts and agency work), which, alongside cuts in welfare provision, have conspired to limit their control over their working hours and conditions (Trades Union Congress, 2020). These factors are likely to make it difficult - and possibly economically unfeasible – for some to reduce their work hours or reorient their (unpaid) leisure time unless their economic security improves, and sustainable social practices are better mainstreamed into their daily lives. Interventions that seek to re-think the world of work must take into account these differentiated experiences of employment. There is scope to re-think workplace incentive schemes, thereby removing perverse motivations towards greater and more carbon-intensive consumption. For instance, replacing company car schemes with subsidised public transport allowances, or additional holiday allocations for those that choose 'slow' travel options over carbon-intensive counterparts, such as the Climate Perks scheme spearheaded by UK climate charity Possible.[49] Specifically relating to the fossil fuel industry, Carbon Tracker (2020) has called for a complete overhaul of executives' remuneration packages to break the incentive loop from continuing to expand fossil fuel production.

As the world of work currently adapts to the structural challenges posed by Covid-19, with millions of people having to adjust their working patterns around the world (Davidson, 2020), there is added scope to thread sustainable behaviour change through work and the workplace with the normalisation of home-working, new and emerging business models and a wholesale shift towards online services, products and practices (Carroll & Conboy, 2020).

47 https://www.greeneuropeanjournal.eu/questioning-the-centrality-of-work-with-andre-gorz/
48 https://www.rapidtransition.org/stories/moving-to-a-four-day-working-week-with-one-months-notice/
49 https://www.climateperks.com/

iii. Rebalancing political systems

Challenging power

The 'What'

If social transformation, of which behaviour change is merely one element (albeit an important one), is to be progressive, sustained and sustainable, we need shifts in power within institutions and organisations from the community to the city, regional, national and international level, as well as across the public and private sectors. If behaviours, practices, values, institutions and infrastructures are to be realigned towards sustainability, we need change in each of these sites. Though the magnitude of the task can appear overwhelming, it also suggests there are multiple entry points to trigger change in this ecosystem of transformation. This means that interventions to shift finance can bring about institutional changes and shifts in power relations which can enable behaviour change as new values take hold and alternative social and technological infrastructures are put in place to support and enable sustainable living. Likewise, behaviour change from below combined with social mobilisation can build momentum for lasting change. Institutions and political programmes, however, need to protect, generalise and enforce those gains.

The 'How'

Shifts towards alternative economies and lifestyles will not be possible - or will amount to little - without unsettling incumbents. As Fuchs et al. put it:

> **informal and implicit theories of social change of scholars and activists in sustainable consumption and sustainable development fail to address power in a sufficiently explicit, comprehensive and differentiated manner and how that failure translates into insufficient understandings of the drivers of consumption and the potential for and barriers to absolute reductions (2016:298).**

They continue, "Simplistic assumptions about the natural diffusion of good ideas, for instance, can lead to over-optimism by advocates of sustainable consumption, resulting in frustration and despair when those changes do not materialize" (2016:299).

They conclude,

> **for those of us deeply concerned about the long-term existence of life as we know it, to avoid power is to risk condoning a system that is inherently unsustainable and unjust, both in the short and long term, and at home and abroad. Shying away from power allows the trends to play out to their logical and tragic ends. Asking about power, uncovering the hidden and exposing the inequitable is a civic obligation, a sustainability imperative, and a justice prerequisite (2016:306).**

Strategies that challenge and un-do incumbency are key, thereby exposing the close ties between rule-makers, major corporations and those vested in shaping and expanding business-as-usual policies. This also implies active roll-back and advocacy around funding of political parties, secondments to government departments, commercial directorships and the like (Newell & Martin, 2020). Beyond legislation, strategies and initiatives that attempt to disrupt incumbency and address broader governance issues like the role of finance in politics, revolving doors between industry and government and structures of corporate governance can help to advance this agenda. Carbon Tracker draws attention to fossil fuel executives' remuneration packages that - despite various net-zero pledges - still incentivise and reward unsustainable behaviours, such as increasing fossil fuel production or the size of reserves, which locks businesses into loops of continued expansion and exploration (Carbon Tracker, 2020). To put it bluntly, as Commissioner Doris Fuchs did, "we need to get money out of politics". Many of the measures summarised in Table 4 about registries, rules on conflicts of interest, party funding and the like illustrate what might be possible.

Governance for a sustainable economy

The 'What'

As noted above, a prerequisite for democratic (rather than imposed) societal transformation is deepening democracy itself through the revitalisation of systems of representation and participation, since existing structures privilege status quo interests. Who decides which limits are set, by whom and how they are enforced are vital to the legitimacy and social acceptability of transitions. As Clarke et al. state, "The 1.5 C target also requires lifestyle changes on a range of totemic issues like diet, personal travel and home heating in a relatively

short period of time. Without public buy-in, these could prompt significant resistance. Given the short timescale, the infrastructure of public engagement needs to be put in place just as the infrastructure of policy change does" (2018:4). Just as we need greater attention to be paid to input and throughput consumption, so too we need to bolster input and throughput legitimacy, i.e. the *quality* of sustainability governance processes (Schmidt, 2013).

The 'How'

From Citizen Assemblies and participatory budgeting, to the representation for future generations, there are many spaces for engagement and participation that can be activated or built. This would involve developing and refining more participatory tools for the deliberative development of scenarios for change, such as foresight exercises (Mao et al., 2020) driven by citizen's own values, concerns and priorities. To be challenging and innovative, this would have to involve artists and cultural industries, as well as skilled facilitators, to help people visualise different futures and appreciate the tensions, trade-offs and opportunities that will attend any attempt to move towards them.

Table 4 below provides some selected examples of governance innovations that funders might want to support.

Table 4: Institutions for increasing accountability and deepening democracy

Climate change committees	Building cross-party political support Establishing ongoing reporting and accountability mechanisms
Rules on party financing: • State funding of political parties (Germany)	Managing interest group control of politics: the 'captive state' phenomena Mandatory and stringent regulations on lobbying Transparency requirements for lobbying Transparency requirements for the additional income of politicians Limits on campaign spending
Participatory democratic innovations: • Deliberative governance (e.g. citizens' assemblies in the UK, participatory budgeting in Lichetenberg) • Standing citizen panels able to hold governments to account for agreed transitions pathways	Bring in more actors with an interest and a stake in bolder action
Governing participation and representation: • Ombudspeople for future generations (Israel, Hungary, Wales) • Diversifying expert committees • Lowering voting age to 16 to widen the constituency of actors with a stake in policy • Registries of interests and active exclusion of politicians with conflicts of interest • Governance and policy for wellbeing	Foreground in policy issues the consequences of decisions for future generations Limit incumbent interest group penetration of decision-making processes Transparency requirements for interest groups participating in policy making process Advisory Committees on Business Appointments could be given statutory powers and resources to investigate and the power to block appointments where there is a clear conflict of interest WEALL WEGo initiative: a collaboration of national and regional governments promoting transferrable policy practices around a shared ambition of building wellbeing economies

Revitalising citizenship

The 'What'

Revitalising notions of citizenship can empower citizens and communities to make the changes required to live and thrive sustainably, giving each citizen a voice and showing them that change is possible. The majority of the Commission highlighted the importance of revitalising citizenship in order to challenge the dominant idea that individuals are passive consumers and instead recognise people and communities as *active citizens* with the agency to shape their own lives and the communities in which they live as part of broader ecosystems of transformation. Re-conceptualizing citizenship needs to be done in a participatory and inclusive way (Moharty, 2006), respectful of difference, and able to express itself in global solidarities not tied to particular nation states, even if demands and social contracts are primarily directed and negotiated via the state.

With active citizenship comes greater responsibilities on both the individual and collective level to shift behaviours and societies onto a more sustainable footing. The individual behavioural response to Covid-19 has offered a glimpse of the social obligation that responsible citizenship entails, with individuals voluntarily self-isolating, socially distancing and wearing a facemask to limit the spread of the virus.

The 'How'

Threading together many of the interventions outlined in this section are strategies and efforts that revitalise notions of citizenship and participation within the public sphere. Research indicates that when spaces and processes are created for citizens to directly engage with, deliberate and shape public policy, the result is recommendations that recognise and seek to address the structural determinants of overconsumption and underconsumption (Kythreotis et al., 2019; Devaney et al., 2020; Muradova et al., 2020; Citizen's Assembly UK, 2020; Convention Citoyenne pour le Climat, 2020).

The recent findings from Citizen Assembly UK, for instance, indicate that when individuals are informed and empowered to analyse, discuss and debate our collective response to climate change, there is real appetite for radical change at both the micro, miso and macro-level. Recommendations from the report include higher prices for frequent and further fliers, efforts to incentivise reduced meat consumption and scaling up active travel infrastructure (Citizen's Assembly UK, 2020). What's more, concepts of fairness, accessibility and affordability are prominent throughout all the Assembly's recommendations. Moreover, Ireland's citizen assembly resulted in similar recommendations, with the assembly calling for higher taxes on carbon-intensive activities (Muradova et al., 2020). Indeed, it is abundantly clear that there is appetite for radical changes (RESET, 2020), but that such change must be supported by a proactive and protective state. This is another manifestation of the cycles of reciprocity emphasised throughout the report.

Strategies that seek to expand and rejuvenate citizenship could usher in societal transformation in a multitude of arenas: mobility, housing, diet, leisure and consumption of goods and services. There is a clear role here for funders and the philanthropic community to actively pursue projects and programmes that create the reflexive and deliberative spaces where responsible citizenship can be nurtured and exercised, enabling citizens to amplify their roles as agents of change within ecosystems of transformation. Examples of such spaces range from citizen assemblies and citizen juries, to advocacy networks and local Transition Networks.

iv. Driving social transformation

Unleashing imagination - individual, collective and institutional

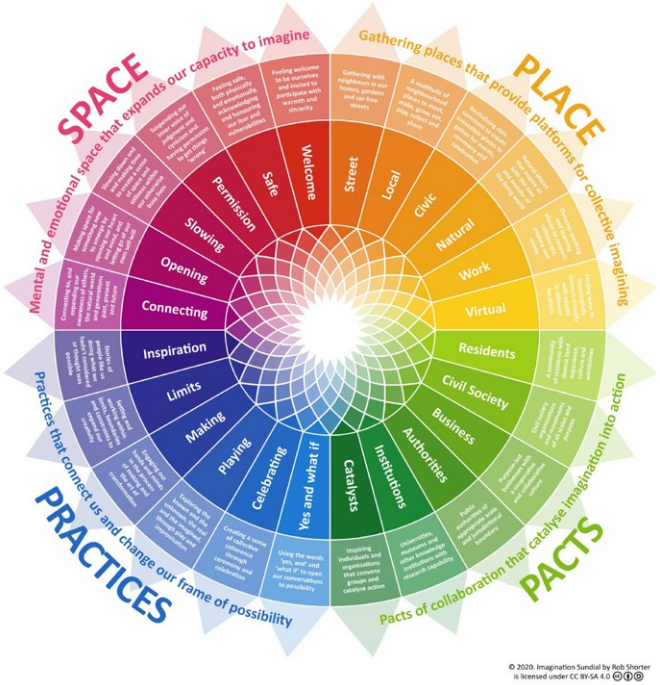
The 'What'

Amplifying stories of change is a potent intervention point for driving and scaling behaviour change, but they require an underappreciated human capacity: imagination. Our individual, collective and institutional imagination has been stymied in recent decades through an increasingly bureaucratic, rigid and goal-orientated organisational structure (Hopkins, 2019). Now, imagination is more important than ever for thinking through many of the problems that we face as a society, conceptualising alternative paths forward and creating a deep societal longing for a sustainable future. This implies fostering the innate imaginative power of humanity through the creation of safe, reflexive and open spaces for exploring alternatives. These must be constructive spaces where different forms

of thinking and imagining are discussed freely. They are not, however, spaces for group-think or what Commissioner Bill Rees calls "safe cognitive cocoons" that form refuges from "the harsh barbs of reality". They need to be challenging, deliberative and visionary. This is key to building new narratives about attractive alternatives to the present. As Commissioner Lewis Akenji notes, "we need to engage people in formulating visions of future societies. Showing alternatives. We have had too many doomsday scenarios and emphasis on what we are taking away from people. We need to show them what society *can* look like."

The 'How'

Working with and through the education system could be an incredibly impactful approach to unleashing our individual and collective imagination by cultivating an understanding of behaviour change from a young age and nurturing alternative values. We are reminded of a conversation with a former climate campaigner for Greenpeace who grew tired of railing against the inaction of powerful leaders and decided the best investment of his time was to set up an alternative school, with ethics of care and sustainability at its heart to nurture a generation of people with compassionate values that would be less likely to engage in destructive behaviours. Yet, the mitigation impacts and cultural shifts of this might not be felt for generations, when the urgency of the climate challenge requires immediate shifts.



Rob Shorter, Imagination Sundial, 2020.

The short-term and near-term focus should therefore be on unleashing the power of imagination within organisations, such as private business, local government and community hubs, which will have immediate effects on decision-making, organisational psychology and the overall aims of organisations, underpinned by strong external incentives to do so. Commission member Rob Hopkins cited Rob Shorter's 'imagination sundial', (see image below) which sets out four conditions required for stimulating human imagination:

1. **Spaces** within organisations that are designated for reflection and imagination. There is a temporal element involved in this, where organisations have to ring-fence time for designing, maintaining and using such spaces and practices.
2. **Places** in villages, towns and cities where individuals and organisations can visit to shift their thinking about what is possible. Such places can range in their scope and size, but the most important factor is accessibility.
3. **Practices** that actively stimulate and nurture the imagination. These can include group exercises that invite participants to actively imagine potential futures or can be more reflexive, meditative exercises undertaken by an individual.
4. **Pacts** where organisations meet half-way on matters of imagination. These can be the result of processes of compromise and convergence or dedicated procedures and mechanisms, such as Wales' Wellbeing of Future Generations Act and Finland's Participation in Long-term Decision Making (PALO) research initiative.

Stimulating the imagination is only one half of this process: strategies must also seek to actively un-imagine the present, displace its status as the normal way of organising life and challenge existing paradigms through myth-busting. This is the most transformational of the tipping points identified by Meadows (1999) discussed above. Here, there is huge potential for funders to support communications campaigns, public awareness programmes and public relations initiatives that ask questions we all take for granted, such as "why is flying so cheap?" and "what makes it cheap?", raising awareness around the problematic nature of current consumption patterns. By un-imagining the present, we create a glimpse of what the future could hold.

The co-production of plans, future-gazing and the asking of tricky '*what if*' questions should also not lose sight of the very human need for fun, play, empathy, engagement, constructive competition and rewards - all of which are powerful tools at most organisations' disposal. In so far as these encourage engagement and participation, as well as enabling change and reflection within powerful entities like corporations, they have value that can be further leveraged. An essential element of this process is locking in stated behavioural intentions and commitments, either publicly or personally, to embed them into habitual behaviour (Kurz et al., 2015). Positive examples include the Energy Saving Trust (EST) in the UK that targets both one-off sustainable actions or purchases, such as insulating your home, and on-going energy saving behaviours. There may be a role for *gamification* and 'edutainment' as a mechanism to embed - and then cement - commitments and behavioural intentions into daily life (Owen, 2017). The need for more powerful ways of visualising and communicating alternatives creates an integral role for arts and cultural organisations too.[50]

Amplifying change

The 'What'

It is often difficult to comprehend the nature and implications of the far-reaching changes required to put society on a sustainable pathway. To ameliorate this, we must become better as a society at amplifying and celebrating change when it occurs; showing that it is not only possible, but desirable. By amplifying change and stories of change, we can expand the realms of possibility and broaden our collective horizons about what is 'normal', what is 'possible' and what is 'desirable'. Raising awareness of change also plays a part in facilitating and establishing change within broader networks of change, which is vital for, in the words of Commissioner Dr Kate Burningham, "making different ways of living normal".

The 'How'

A successful programme of amplifying change will be visible when the once extraordinary is deemed ordinary, prising open the Overton window (see above), assisting "the creation of new worlds" as Commission member Nicole van den Berg put it. Historical precedents can provide some examples of when rapid and transformation social change has taken place, but they can only provide sketches and outlines due to the herculean task of tackling climate breakdown (Newell & Simms, 2020). Showcasing and sharing what the Rapid Transition Alliance refers to as '*evidence-based hope*' is vital to this endeavour and should be done through a diversity of channels to maximise reach and impact.

> *"We need to find those big voices and amplify them - they are there."*
> **Nafeez Ahmed**

Supporting social movements

The 'What'

In spite of social movements being understudied within the fields of psychology and behaviour change (if not within sociological and political spheres, e.g. see Ciplet et al., 2015; Fisher & Robertson, 2015), the majority of the Commissioners identified them as a potential future intervention point. The past few years have seen a proliferation of social movements crystalising around environmental and climate issues globally, such as Fridays for Future and Extinction Rebellion, that have emphasised the potential of both collective action and behavioural contagion (Otto et al., 2020). Individual behaviour change can be the first step to more active engagement with processes of change, including social mobilisation (de Moor & Verhaegen, 2020; Kalmus, 2017; Leiserowitz, 2019; Willis & Schor, 2012). Movements like Extinction Rebellion and Fridays for Future have been instrumental in shaping the political discourse around climate action, but are not the only social movements enacting change in their communities, with a variety of community and transition groups active within the field of sustainable behaviour change.

What all these movements have in common is that they are dynamic and leverage a networked approach to change, utilising non-violent protest and new-media platforms to expand their reach. While the goals and modes of operation of some social movements may not entice action from the majority of the population, they are vital in setting the agenda on certain matters of policy and the public framing of specific issues. It is hard to imagine

50 Examples would include Metis, Swarm Dynamics and Julie's Bicycle.

governments around the world declaring climate emergencies and legislating for net-zero if it hadn't been for Greta Thunberg, the Fridays for Future youth-strikes and protests by Extinction Rebellion.

Social mobilisation is also a key ingredient in enabling and accelerating behaviour change by harnessing the consumer power of citizens. As Michael Maniates puts it, "individual consumption choices are environmentally important, but their control over these choices is constrained, shaped and framed by institutions and political forces that can be remade only through collective action" (2002:65). Sustainable Community Movement Organisations (SCMOs) provide an important focus on political consumerism. SCMOs can be defined as social movement organisations that have the peculiarity of mobilising citizens primarily via their purchasing power and for which the main 'battlefield' is represented by the market where SCMOs' members are politically concerned consumers (Forno & Graziano, 2014:142). Political consumerism aims at re-socialising 'wrongdoers' and changing business activities through the 'power of numbers'. An increasing number of movement organisations acting regionally, nationally and globally have started to incorporate political consumerism into their repertoire of action.

This type of activism builds on longer histories of '*civil regulation*': civil society-based regulation of private actors through liberal and critical strategies of working *with* (codes of conduct, partnerships, certification schemes) and *against* the market (boycotts, shareholder activism, protest and disruption, subvertising) (Newell, 2001). Others go further in trying to confront consumption through voluntary simplicity and living alternative lifestyles, as well as trying to challenge the power and subvert the effect of advertising. Examples include the Transition Network, the anti-consumerist network Enough! and AdBusters, as well as networks such as the Eco-Villages Network. These movements provide an important way of challenging trends towards individualisation of responsibility, commodification, and externalisation and distancing (of consumers from the impacts of their consumption 'choices') (Princen et al., 2002). This is important because, as Maniates argues, "when responsibility for environmental problems is individualised, there is little room to ponder institutions, the nature and exercise of political power, or ways of collectively changing the distribution of power and influence in society" (2002:44).

Quote Box 8: Challenging individualisation

"Individualisation is both a symptom and a source of waning citizen capacities to participate meaningfully in processes of social change. If consumption, in all its complexity, is to be confronted, the forces that systematically individualise responsibility for environmental degradation must be challenged."

(Maniates, 2002:59)

The 'How'

Funders and philanthropic organisations can play a pivotal role in sustaining social movements, building strategic frameworks with them and enriching the networked ecosystems of transformation that movements are part of and benefit from. Through cultivating social movements and aiding their expansion, conceptions of individuals as passive consumers can be challenged and more empowering ideas of individuals as active, engaged citizens can flourish (Mathie & Gaventa, 2015), articulated around the idea of 'responsible citizenship' as suggested above. More importantly, funders and philanthropic organisations must illustrate the importance of connecting demands for systems change with the adoption of strong sustainable consumption practices in line with the ideas of ecosystems of transformation and cycles of reciprocity.

There is a real risk, however, that by prioritising calls for systems change, due to their explicitly political nature, social movements may underestimate the level of individual transformation required, leading to a form of solutions aversion. What's more, strategic frameworks must be conscious of the places and cultures that they are operating within, as different political structures and experiences of democracy mean that social movements will be received differently. Commissioner Edward Mungai pointed out that the effectiveness of social movements in Europe, for example, will not necessarily be mirrored in East Africa and that funders need to be mindful of these place-based differences.

v. Focusing on behaviour hotspots

Globally, the wealthiest 10% of the world's population is responsible for roughly half of all greenhouse gas emissions, while the poorest half is responsible for less than 10% (Gore & Alestig, 2020). Moreover, while two thirds of the top 10% are in OECD nations, the bottom 40% of the population in the United States emit more per capita than the richest 10% of people in countries such as China, India and Brazil

Targeting the polluter elite

The 'What'

While it's true that the climate crisis requires all of us to change our behaviours, some need to change more than others. Globally, the wealthiest 10% of the world's population is responsible for roughly half of all greenhouse gas emissions, while the poorest half is responsible for less than 10% (Gore & Alestig, 2020). Moreover, while two thirds of the top 10% are in OECD nations, the bottom 40% of the population in the United States emit more per capita than the richest 10% of people in countries such as China, India and Brazil (Oxfam, 2015). Of greater concern is the fact that lifestyle emissions of the richest in society are actually increasing, with any curtailment of lifestyle emissions being driven by shifts in behaviour amongst the lower and middle classes (Gore & Alestig, 2020). Moreover, there is a huge range in the size and distribution of carbon emissions within the wealthiest 10% of the global population. As Gore and Alestig (2020) show, the estimated emissions from the top 0.1% of earners is around 217 tCO_2 equivalent - many hundreds of times greater than the average emissions footprint of the poorest half of humanity.

As emphasised throughout the report, relying on conscientious individuals to 'do their bit' will never be enough to put society on a sustainable pathway without substantial shifts in the behaviour of the polluter elite (Kenner, 2019; Wiedmann et al., 2020). Indeed, the ability to persuade people to adopt new behaviours is undermined by widespread perceptions that the greatest polluters - the most affluent citizens in the world - are not pulling their weight. Not only does this cement feelings of individual impotence ("what I do won't make a difference"), but it also damages the perception of fairness in the fight against climate breakdown, as if there is one rule for the rich and another for the rest of society. We have seen how damaging this sentiment can be in the context of sustaining behaviour change in the face of Covid-19, where politicians setting rules on behalf of society are then caught flouting them (sometimes on multiple occasions).

The 'How'

Strategies that specifically target the behaviours of the richest would have vast implications for emissions (Druckman & Jackson, 2009; Anderson, 2018; Kenner, 2019; Fouquet & O'Garra, 2020). Enacting such policies, however, would prove politically challenging as the polluter elite have sway and influence within policy making circles, as well as substantial resources to pay for the privilege of polluting (which can undermine the effect of incremental taxes, for instance, as noted below in relation to frequent flier levies). But shedding light on the vast inequalities in carbon emissions - both between the Global North and South, as well as within nations too - is crucial for advancing notions of *fairness* in our collective response to climate breakdown, as well as creating a sense of social cohesion and interpersonal influence, which can act as an important precursor for scalable change, both now and in the future.

While further work is clearly required, initiatives such as the Frequent Flier Levy (FFL) emphasise how policy can be tailored to rein in the emissions of high-income, high-mobility polluters (Fouquet & O'Garra, 2020), while instigating a public conversation about the irregular polluting behaviours of the most affluent that could ultimately shift norms around frequent flying (Gössling et al., 2020). The Rapid Transition Taskforce report noted that a FFL could,

> **neutralise most public opposition to increasing taxes on air travel by maintaining access to low levels of affordable air travel for people of all incomes, while concentrating fiscal pressure on 'problem flyers' at the highest end of the emissions spectrum - including putting an end altogether to 'hypermobility' amongst the richest 1%. New tax revenue could be hypothecated to support low carbon alternatives to air travel such as high-speed rail and video conferencing, as well as industrial R&D to help decarbonise flight itself (2019:24).**

However, a FFL on its own would not be enough to deliver substantial mitigation and it would need to be combined with supply-side measures, such as curtailing airport expansion and ending favourable tax regimes for kerosene. What's more, the super-rich have shown their ability to avoid such levies if implemented, as seen by the surge in private jet use during the global pandemic (Georgiadis & Hancock, 2020).

"Policies will be better received by the public if they are equitably framed."

Lorraine Whitmarsh

Focusing on high-impact behaviours & ways of life

The 'What'

When it comes to unsustainable behaviours, not all human behaviours are equal. Clearly, we need to address all domains of lifestyles if 1.5 degree lifestyles is the goal (Koide & Akenji, 2017; Mao et al., 2019). But as Dubois et al. show, car and plane mobility, the consumption of meat and dairy, and the heating of residential homes make up the majority of households' environmental footprints (2019). Due to the dominance of these high-impact behaviours, or hotspots, Dubois et al. suggest that "rather than focusing mainly on household appliances, heat or electricity provision, our results suggest research and policy should deal with cars, air traffic and eating meat" (2019:152). Others have suggested adding the size of housing to that list (Bierwirth & Thomas, 2019; Brown, 2018; Cohen, 2020; Ropke & Jensen, 2018). This is significant not least due to the additional consumption practices that living 'larger' facilitates (e.g. energy, water, maintenance and domestic services, duplication of appliances and furnishings, etc.). As Commissioner Sylvia Lorek observed, "the constant rise of per capita living areas is still a blind spot in the debate". Kuhnhenn et al. (2020), for example, assume a 25% reduction in average personal living space will be necessary as part of their *Societal Transformation Scenario for Staying Below 1.5°C*.

To date, policy has been ineffective at targeting these high-impact behaviours for a variety of reasons, including a failure on the part of households to conceptualise these high-impact behaviours as major shares of their footprints, the promise of looming technological fixes in specific sectors such as aviation (Peeters et al., 2016), fear of lessening a nation's competitive advantage on global markets through interventionist policies (Bows & Anderson, 2007), or the fact that these areas of our lives are integral to ideas of self and status and are therefore likely to met with pushback (Dubois et al., 2019:152). The sheer scale of the cumulative impact of these behaviours, and the lack of substitutes available, makes behaviour change essential. In the words of Commission member, Leo Murray, "there are no feasible techno-fixes that can get rid of large sources of emissions, especially in high-impact sectors such as long-distance travel and diet".

The 'How'

There is a clear dilemma here in that those areas where interventions might yield the most impact are controversial to target or the hardest areas for policy to reach. Around diet, if the entry point is health, as we have seen with discussions around sugar taxes and restrictions on advertising, there is often greater public acceptance of measures. At the same time, notions of fairness and equitability are essential precursors to successful climate policy - in general terms, but also specifically relating to policies targeting high impact behaviours. For policies to be seen as legitimate amongst the general population, they must take into account issues of differentiated responsibilities within society, as well as issues pertaining to justice. As Commission member Nicole van den Berg put it, "poorer people shouldn't be told to give up meat and cycle to work. Equity is vital for this discussion." The Rapid Transition Task Force notes that while there may be value in "the stigmatisation of certain types of behaviour…we must make sure it does not stigmatise particular people in the process" (2019: 49).

At the same time, relying on interventions that only focus on the high-impact behaviours of the richest in society will not deliver the widespread mitigation required. Other high-impact behaviours are more ubiquitous than aviation, like car travel and diet, and therefore require interventions that seek to shape choices and behaviours through infrastructures and the provision of services. Better choice architecture and choice editing can, in the words of Commission member Julia Leventon, curtail "the capacity to live destructive lives". For instance, better active travel infrastructures, such as dedicated and safe cycle lanes, can rapidly decrease the need for daily car use and increase the uptake in cycling (Aldred et al., 2020). Research from Aldred et al. (2020) found that the 20-year 'health economic benefit' in areas close to the mini-

Holland schemes in London is calculated at £724 million, while the cost is approximately £80 million after three years' of interventions.

In response to Covid-19 restrictions of public transport and fears of viral transmission, many active travel schemes have sprouted up across Europe and have successfully increased the uptake in cycling (Kraus & Koch, 2020). In the longer term, as economies attempt to stimulate growth as part of their recovery efforts, there is scope to help shape the upticks in consumer spending activity to ensure that they do not rapidly induce emissions growth. For instance, Kumar (2016) found that tax exemptions for domestic tourism in India encouraged less carbon intensive forms of travel, which could perhaps be emulated elsewhere as part of post-pandemic economic recovery plans.

Beyond these types of infrastructural interventions, there is considerable communications work needed to garner public awareness around what is regular and irregular behaviour in the realm of high impact behaviour. Take flying, for instance. A combination of cheap tickets, perennial advertisements encouraging and normalising frequent flying, as well as the cultural romanticism that surrounds this mode of transport, present an image of incessant flying as not only normal, but desirable. This disguises the fact that the majority of citizens will not fly at all in a single year, while the richest citizens will take the lion's share of flights and are responsible for the bulk of emissions (Department for Transport, 2014; Gössling & Humpe, 2020). Strategies that seek to highlight the irregularity of this behaviour, while also discouraging it, will be able to leverage the human desire for conformity (Walzberg et al., 2019; Leong & Lebel, 2020; Gössling et al., 2020).

The challenge for interventions in this area is threefold:

1. **Setting the agenda** around high-impact behaviours so that interventions and initiatives are seen as valid, equitable and necessary. This could be achieved through awareness raising initiatives, communications campaigns and social mobilisation efforts centred around certain high-impact behaviours, such as meat-consumption, aviation and car use. The process of setting the agenda will differ from nation to nation, and community to community, meaning that efforts must be sensitive to both place and culture.

2. **Target high-impact behaviours effectively and efficiently** without punishing the poorest and most marginalised in society who have done the least to fuel the climate crisis. It is important to identify interventions that will yield a high return in terms of near-term emissions reductions, while being seen to be fair. Finally, interventions must simultaneously target both the demand and supply side of sectors to deliver the emissions reductions required. For instance, a Frequent Flier Levy (demand-side) must be combined with measures that seek to curtail airport expansion (supply-side), avoiding infrastructural lock-in and "air dependence" (Environmental Change Institute, 2006:34). To thread aspects of justice and equity into policy, an International Air Passenger Adaptation Levy (IAPAL) may work in creating a stable and regular source of tax revenue that specifically aids adaptation efforts in developing countries, although such a policy may impact the livelihoods dependent on the tourism industry in developing nations (Chambwera et al., 2018).

3. **Balance issues of justice, carbon inequality and lock-in** in targeted interventions to ensure that the responsibility of behaviour change reflects the agency to enact it. Given the current context of global economic hardships wrought by the Covid-19 crisis, the importance of supporting the poorest has never been more important - both in terms of justice but also legitimising future sustainable behaviour interventions.

"We need to focus on impactful, politically difficult and messy behaviour changes - things that are at odds with how we live today."
Stuart Capstick

Engaging with food

The 'What'

Diet is a high-impact behaviour - or hotspot - and consumption choices within the realm of food can have profound effects on our per capita carbon emissions. Globally, food production is responsible for 26% of global GHG emissions (Ritchie, 2020), but what we eat - our consumption choices and habitual food practices - can vary greatly (Aleksandrowicz et al., 2016). For instance, the carbon emissions of the average European diet is around 1,070kg CO_2 equivalent per year (Sandström et al., 2018), but the consumption of meat, eggs

and dairy make up 83% of those GHG emissions (Ritchie, 2020). Unsurprisingly, reducing global meat consumption is an efficient strategy for mitigating emissions and other environmental issues, such as biodiversity loss (Stoll-Kleemann & Schmidt, 2016). Hayek et al. found that current dietary trends favouring meat and dairy incurred a 'carbon opportunity cost' as the land designated for meat and dairy production has significant sequestration potential (2020). At this particular juncture, where global meat production (which roughly mirrors consumption) has fallen for the past two years (FAO, 2020), strategies to reduce meat-consumption could accelerate the move away from meat-heavy diets and food production, acting as a social tipping point.

The 'How'

Within food systems, there are multiple entry points that could be leveraged to galvanise further behavioural changes, such as health, wellbeing, community, climate change, environmental concerns and animal welfare. As one member of the commission, Nicole van den Berg, noted: "More sustainable food choices are less dependent on external actors (compared to decisions around housing and transport), they are day-to-day choices that individuals have control over." The work of Tziva et al. (2020) highlights this phenomenon through the emergence of the meat-substitute industry in the Netherlands, where consumer norms surrounding appropriate behaviours created niche markets where innovation could accelerate without any preferential fiscal treatment.

Beyond the research and development, as well as the subsequent deployment, of lab-grown meat (Chriki & Hocquette, 2020), the incentivisation of plant-based diets also has scalable potential (Citizen Assembly UK, 2020). Change, when it occurs, can be rapid. In the UK, from the year 2016, the number of people identifying as vegan has increased by 350%.[51] For this change to be sustainable, it will be critical to ensure increased demand for plant-based diets is not principally met through intensive industrial and monoculture agricultural systems, but rather paralleled by shifts in the organisation of the food system itself.

Engaging more directly with food systems and food sovereignty (GRAIN, 2016) could be an effective way of scaling sustainable behaviour change by highlighting co-benefits, as food connects a variety of normative touch points such as health and connection to nature, while empowering individuals. Food can also be an effective way of fostering norms and values around appropriate behaviours, which can then become institutionalised and seep into other behavioural areas, such as waste disposal or conspicuous consumption. Specific strategies in this area could look to create and expand place-based food and agricultural organisations, such as Community Supported Agriculture (CSA) programmes, or information and communication campaigns that encourage greater experimentation with food. Empirical research found that CSAs can significantly impact food lifestyle behaviour and provide a variety of sustainability and health co-benefits including increased vegetable consumption, less intake of processed foods, consuming seasonally appropriate items and more meals being eaten at home (Allen et al., 2017; Russell & Zepeda, 2008). Both within and across organisations, there is scope for strategies that seek to introduce meat-free products into people's diets, such as the 'Meatless Monday' initiative within the Norwegian army (Milford et al., 2019) and the provision of vegetarian and vegan school meals in 182 primary schools in the UK city of Leeds (Leeds City Council, 2020).

All of these interventions must, of course, be conscious of navigating cultural and place-based sensitivities. Though food might not necessarily be reliant on external actors, it is certainly subject to deep cultural influences, and social practice theory would call for mindfulness in how we accommodate these in behaviour change strategies. As Reisch et al. (2013:10) explain, "food habits and preferences are shaped by cultural traditions, norms, fashion and physiological needs, as well as by personal food experience and exposure to the consumption context (i.e. foodstuff availability and accessibility)." In the UK, Europe and elsewhere, the rise of meat substitutes has been one way of getting around the practical concern of how to 'fill the hole on the plate where the meat used to be', to paraphrase Paul McCartney, who mentions this was the motivating rationale for the introduction of his wife, Linda's, meat-free product range in the USA in 1994.[52]

51 https://www.rapidtransition.org/stories/the-vegans-have-landed/

52 https://www.theguardian.com/lifeandstyle/2007/apr/29/foodanddrink.features4

vi. Spearheading innovation: new narratives, spaces and connections

Agenda setting & narrative shaping

The 'What'

In some regions and nations sustainable behaviour change sits relatively low on the political and social agenda, with climate mitigation policies primarily focused on decarbonising electricity and greening large infrastructure. Even within countries where sustainable behaviour change enjoys a reasonable amount of public awareness, the narratives shaped around these issues can often obscure the scale of action required, the urgency with which it must occur and where those transformations are needed. Discourses of climate delay include redirecting responsibility, pushing non-transformative solutions, emphasising the downsides (of action, rather than inaction) and wholesale surrender to climate change (Lamb et al., 2020). The key features of all four of these delay discourses are that they tend to misrepresent facts, raise adversity towards climate action and imply the impossibility of change (defeatism), further undermining climate action. Correspondingly, the dominant narrative around the climate crisis is primarily a technical one, seen through the dissemination of scientific findings, climate models and cost-benefit analyses, which fail to connect and resonate with the majority of citizens' lives (Munshi et al., 2020).

The 'How'

There is huge potential for funders and the philanthropic community to take a more robust advocacy role in agenda setting and narrative shaping strategies around sustainable behaviour change. Central to these strategies must be an intuitiveness for moments of accelerated change, which perhaps preconfigure social tipping points as discussed in Section 4. For instance, the speed of the spread of the Black Lives Matter or #MeToo movement across the globe caught many by surprise, but were sparked by particular moments that tap into deep veins of social antagonism, a sense of historical injustice and a desire for change. While we cannot anticipate when these windows of opportunity present themselves, we can prepare ourselves for when they do.

As such, shaping narratives around behaviour change requires a more culturally-centred framework in order to shift values and behaviours. Munshi et al. (2020) advocate for such an approach to improve public engagement with climate action, comprised of four domains, which can also be applied to strategies seeking to scale sustainable behaviour change:

1. **Values**: The narrative framework must factor in the values and beliefs of different groups of peoples. Values are held individually but when similar viewpoints are collectivised at a group level, they can become a cornerstone of group cultures (Smolicz, 1981). Values shift from society to society, which means that the response to climate breakdown will too - narrative strategies must reflect this.

2. **Place**: The framework must be intuitive of the different environments in which people live as this is a decisive factor in determining what information or policy feels prescient to them. Culture, too, is place-based which means that any narrative strategies must take this into account, avoiding blanket strategies.

3. **Power**: The framework needs to factor in the dynamics of power that people navigate every day. Narrative strategies must be aware of the winners and losers of scaling up sustainable behaviour change and seek to meaningfully empower the most marginalised groups of society who are least responsible for the climate crisis.

4. **Narrative**: The framework should always consider the existing and interwoven narratives that guide the actions that people take, whether pertaining to climate action or other areas. Narratives are tools that we all use to steer us through each day, help us assess risk and, in turn, what actions and behaviours are viable. A framework that successfully integrates narratives goes beyond the facts and figures of technical discourse to the telling of stories, which can be a potent means for instigated shifts in behaviours and values (Hopkins, 2019; Munshi et al., 2019).

"We need to set the agenda around sustainable behaviour to legitimise future policy interventions."

Ryu Koide

Walking the talk: Leadership & Integrity

The 'What'

There is growing evidence of the effectiveness of leading by example on scaling sustainable behaviours. While research is still in its infancy, initial findings suggest that leading by example on matters of climate change and sustainability can encourage others to adopt greener behaviours or higher values such as altruism (Avolio et al., 2009; Kraft-Todd et al., 2018). It can also challenge the norms, values and assumptions that underpin unsustainable behaviours or consumption choices. For politicians, climate change leaders and the philanthropic community, leading by example and acting with integrity is crucial to marrying up the message of urgency and scale with deliberate actions in everyday life, helping to raise ambition on climate (Le Quéré et al., 2015). Extolling the need to curtail our consumption while engaging in unsustainable behaviours, such as flying to international climate conferences, has been shown to undermine the effectiveness of climate-conscious messaging, with hypocrites viewed as worse than liars among the public due to our aversion to false signalling (Jordan et al., 2017; Attari et al., 2016). The media have played a key part in silencing activists with charges of hypocrisy and amplifying perceptions of a disconnect between words and deeds regarding behaviour change. Gunster et al. (2018: 773) identity three types of climate hypocrisy from their analysis of media coverage:

> ***personalized*** **(which attacks the moral character of individuals based on inconsistencies between their stated beliefs and behavior);** ***institutional-analytic*** **(which identifies contradictions between institutional rhetoric and ongoing policies and practices); and** ***reflexive*** **(which develops sympathetic accounts of the struggles individuals face in reconciling the tension between values and actions).**

The 'How'

The majority of the Commissioners endorsed the importance of leadership and positive behaviour modelling; not only to show that change is in fact possible, but to create unified platforms for concerted action that cannot be undermined easily. Leadership can be performed through the multiple roles we play allowing us to leverage our own networks for change. Whether it's a C-suite executive, a public sector worker or a stay-at-home parent, there is potential to provide leadership (Westlake, 2017). Strategies for ensuring leadership and integrity, both internally within organisations and externally, can come in a variety of forms. This gives individual organisations, funders and key decision-makers the opportunity to think creatively and with an overarching goal or purpose in mind. Examples of 'walking the talk' policies include no-fly pledges across organisations, such as universities, divestment pledges for pension funds or organisations with significant assets under management, remote home-working policies and meat-free cafeterias. The quote from Gandhi that "happiness is when what you think, what you say and what you do are in harmony" speaks to the desirability of this alignment.

The impact of such strategies may differ from organisation to organisation, but all help match rhetoric with action, which is essential for garnering normative change and showing that change is possible. It is important, however, that in the process of forging these new types of leadership, organisations and individuals do not reproduce outmoded forms of leadership that bolster the inequitable distributions of power, especially in terms of gender, race and class. Alternatively, leaders must advocate for a culture of accountability that seeks not to iconise individuals and their actions, but rather cultivates collective responsibility. Such a culture of leadership would be a novel venture and requires holding ourselves to new standards, making integrity a foundational element of this process.

Bringing in new allies

The 'What'

The range of behaviour change necessary, at the scale needed to put humanity on a sustainable pathway, means that new allies must emerge to facilitate and accelerate shifts and transitions in all aspects of society, with effective coalitions forming around them. Several Commissioners also encouraged funders to go beyond the usual suspects (white/wealthy/middle-class/European/North American, conflict-averse and more technocratic organisations), and build relationships with immigrant and tenants' rights groups, informal workers, indigenous and black sovereignty movements. Seeking non-traditional allies who have strong critiques of the status quo and proven capacity to mobilise people and change policies could be a powerful way to scale change.

The 'How'

While these new allies may take many forms, and can appear in a multitude of roles, the following were highlighted by Commissioners as having potential to scale sustainable behaviour change by acting as nodes in broader networks of change:

- **Intermediaries:** Identifying and leveraging the impact of transition intermediaries can have profound impacts on consumption pathways and emissions lock-in. In the case of housing, for example, urban planners can integrate sustainable practices into the built environment (Capstick et al., 2019). Similarly, a car salesperson who advises a customer to purchase an EV is helping to prevent further emissions lock-in within the mobility sector (Sovacool et al., 2020). Intermediaries can communicate the opportunities and obstacles to sufficiency solutions by working with clients, customers and communities (Spangenburg & Lorek, 2019). Furthermore, as detailed in Section 3, institutional entrepreneurs can be viewed as "important brokers for connecting people and networks…providing leadership, building trust, developing visions, and sense-making" (Westley et al., 2011: 771). Utilising intermediaries is by no means a substitute for public policy interventions, which can be far more targeted, but they provide opportunities to access and shape key junctures and moments of change within all of our lives. For them to play this role more effectively, different incentive structures around targets and rewards need to be put in place.
- **Facilitators:** The act of facilitation is an art that requires much greater attention within behaviour change initiatives. Facilitators and guides will be vital in supporting the scaling of sustainable behaviours, working alongside practitioners to combine social learning and the maintenance of collaborative cultures to enact and sustain change. These individuals or communities are not necessarily behaviour change or sustainability experts, but have 'facilitative capacity' (Birney, 2020) to construct and maintain safe, reflexive spaces for collective enquiry, self-learning and co-creation, while embedded within broader networks of change. Examples include the staff and organisers facilitating citizens' assemblies around the world, as well as the Boundless Roots Community, working to support sustainable behaviour change practitioners.
- **Cultural leaders:** Our behaviours are neither spontaneous nor isolated individual actions as they are intertwined with and shaped by wider strategies and structures of economic growth, power and culture (Koch, 2019). Culture's undeniable impact on shaping our behaviours - both the sustainable and the unsustainable - make leveraging the reach and power of cultural leaders essential. Whether they are celebrities, religious leaders or sports stars, these allies can play a pivotal role in engaging, enticing and educating segmented audiences in the process of change. There are a plethora of available methods for cultural leaders to galvanise and enable change, but their ability to shape cultural narratives could be decisive in scaling sustainable behaviour change.
- **Unusual allies:** Reaching out to and engaging powerful and influential sectors with significant scope for behaviour change, but which have been neglected so far, provides a key point of leverage. For example, around global sport where travel related emissions are high, mass catering often unsustainable, waste an issue and advertising revenue from fossil fuel industries (especially airlines) very high there are a growing number of civil society initiatives emerging. Examples include Pledgeball, Spirit of Football, and Equal Playing Field. These encourage commitments from fans to change their own behaviour with pledges, as well as put pressure on their clubs to improve their environmental footprints. These can tap into the popularity of sport and the significant media attention it receives to raise the profile of sustainable behaviour change.

Final word

We are all on a journey and the final destination is as yet unclear. There are many contradictory road maps about where we might want to get to and how, based on different theories of value and premised on diverse values. Promisingly, we have brought about positive change before and there are at least some positive signs that there is an appetite to do what is necessary to live differently but well on the planet we call home.

Changing our ways?

Behaviour change and the climate crisis